



# AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING  
WARM AIR HEATING - SHEET METAL CONTRACTING



**MARCH, 1945**

The Problem of the Handicapped Veteran - - - - -  
Profits During the Winter Months - - - - -  
The Moduflow Control System - - - - -

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## AIR CONTROL

### Roof Ventilator



**FOR USE ON ROOFS WITH  
FOUR WAY SLANT, WHERE  
GABLES OR ATTIC WALLS  
ARE NOT AVAILABLE**

**A**IR CONTROL roof ventilators have been wholeheartedly endorsed by the industry.

—Because they have proven a simple easy method of ventilating attics with four way roofs.

—Because their smooth flowing lines blend with any type of roof.

—Because their stamped construction forms both top and flange from one piece of steel—making the ventilator leakproof.

—Because the large opening (13½ x 4") is screened and recessed far back from the front thereby preventing any chances of leakage from driving rain or snow.

Yes here is a proven and tested roof ventilator that will give lasting satisfaction from both a ventilating and appearance standpoint.

The answer to ventilating an attic with gable ends is Air Control No. 400 or 401 attic ventilator. Attractively styled with rolled edge louvers, these ventilators are all steel construction with ample free area and positive rain elimination.

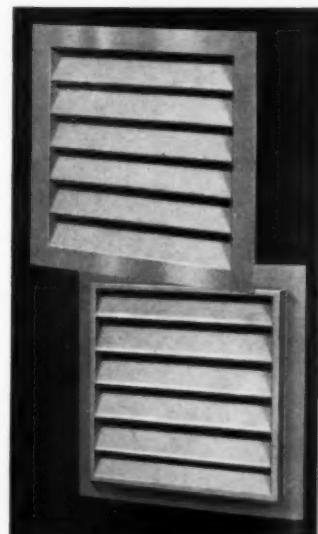


*You Bet We're Proud! Because we've continued our high production and quality of Aircraft and Torpedo Parts -- Air Control has been awarded another silver star for our "E" Flag.*

**AIR CONTROL**  
COOPERSVILLE

#### ATTIC VENTILLATORS

No. 400 Flush Type  
Old or New  
Construction



No. 401  
Recessed Type  
Excellent for New  
Construction

**Write for information on AIR  
CONTROL'S Complete line of  
Registers, Grilles, Floor Faces, Floor  
Registers, Adjustable Ceiling Re-  
gisters and Accessories.**

**AIR CONTROL PRODUCTS, Inc.**  
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**MULTIPLY YOUR MANPOWER**

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**"Mass Production"**

**Portable Electric**

**DRILLS**

**Higher Production...**

**Lower Cost...**

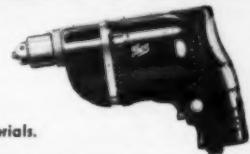
Thor Portable Electric tools enable sheet metal men to do better work quicker and easier. Even with higher wage scales the cost per job is less because of the time saving efficiency of these modern, high speed production aids.

Thor tools are engineered, designed and developed for two primary reasons—to increase production—to lower costs. Both of these objectives were accomplished by reducing the weight—perfecting the balance and improving the grip handles of conventional tools, *with no reduction in power*. The ease of handling and operation inherent in Thor tools greatly increase the efficiency of the operator by lessening fatigue. The result is more work—better work per day.

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"Armored in Plastic"  $\frac{1}{4}$ " drill is available in three speeds; U14K model 2500 R.P.M., ideal for general heavy duty production—U12K model 3750 R.P.M.—U13K model, 5000 R.P.M., for fast drilling on lighter materials.



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Saw



Hand Grinder



Bench Grinder



Screw-driver



Nibbler

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Electric  
TOOLS**

Branches in Principal Cities

# AMERICAN ARTISAN

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

WITH WHICH ARE MERGED

FURNACES  
SHEET METALS

AND

Warm-Air  
Heating

J. D. Wilder, Editor

A. A. Kennedy, Assistant Editor

Vol. 114, No. 3

March, 1945

Founded 1880

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### In This Issue

THE problems of returning veterans are coming more and more into the limelight as more and more veterans return and seek employment in industry. So far as these problems are concerned, our industry is no different from other industries—our former workers may not be "factory hands" and they were, when they left "skilled" workmen, but many are changed personalities. How will we handle them?

Newspapers are reporting that in some localities group insurance is preventing handicapped veterans from working alongside civilians—a short article appears on page 64.

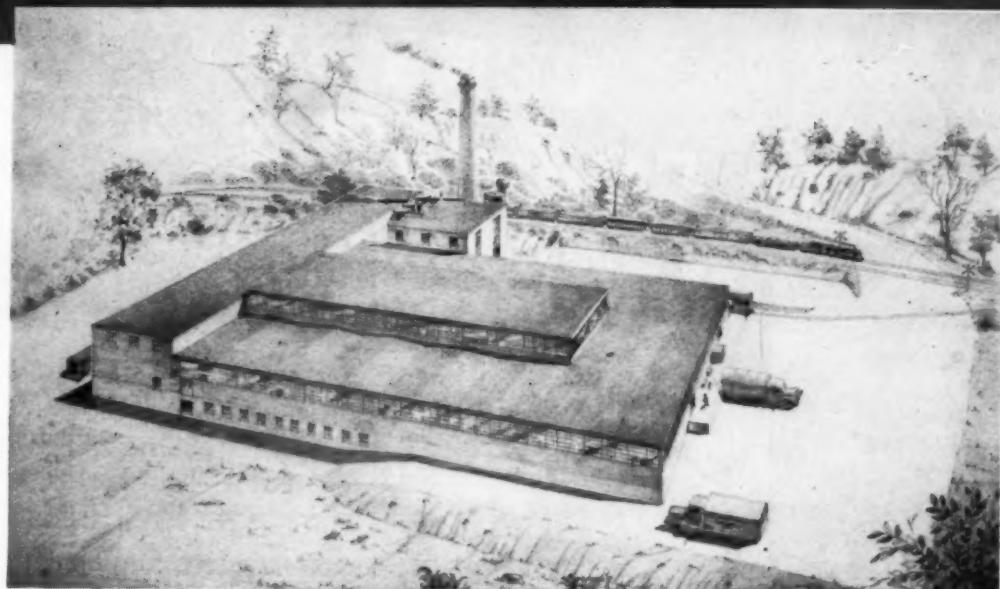
Somewhat the other side of the problem is presented in Arnold Kruckman's "Washington Letter" on page 58. Mr. Kruckman's information was gathered this month in Washington and probably reflects the current thinking of WLB, WMC, WPB, etc. Since you will face this problem sooner or later, we suggest careful reading of both these articles.

How to save up money for the post-war period—"reserves," in other words, is a subject very much in the spotlight now. Arthur Roberts analyzes the problem and explains what you can and cannot do on page 56.

And along this same line, C. E. Bennett presents some worthwhile thoughts on page 60. Did you know what percentage of an average heating business is done each month? Mr. Bennett gives one set of figures. The winter months are low in gross income and devoid of profit. Some things you can do and some things maybe you can sell to raise these low months are described in the article.

There's been much gossip lately about "Moduflow." What the system is and how it works and some test facts constitute this month's "Blueprint of Postwar Heating" on page 72.

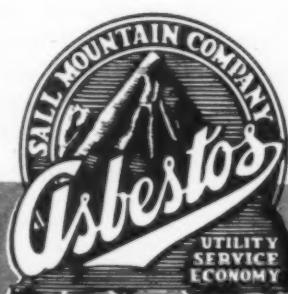
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With the completion of this thoroughly modern plant, Sall Mountain Company is in position to promptly furnish the finest in Asbestos Products.

This new plant is up-to-date in every way and is streamlined for economical operation. Machinery of the latest type has been specially designed and installed; this and improved methods assure our customers the very best in Asbestos Paper, Millboard, Ductboard, Pipe Coverings, Cements and other asbestos products for insulation and fireproofing.



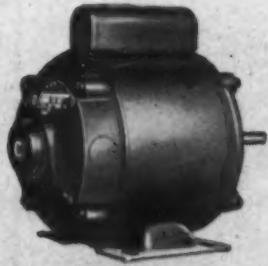
**SALL MOUNTAIN COMPANY**

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Split Phase Induction Motor  
Built in sizes 1/20 to 1/3  
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Capacitor Start Single Phase  
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Single Phase Repulsion Start  
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You Can Build  
More Enthusiastic Customers  
By Selecting From

## CENTURY'S COMPLETE LINE of Air Conditioning Motors

✓ There's a Century Motor available to supply top performance for every piece of air conditioning equipment.

To meet the specialized requirements of air conditioning, Century offers:

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Motors  
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| Single Phase   | Open             | Cushion Mounting |
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In addition to their many features that contribute to quiet starting, quiet operation, and unusual freedom from vibration, Century's insulation protects the vital windings of the motor against the destructive effects of damp surroundings or where sweating frequently occurs. These features contribute to long motor life and, consequently, more enthusiastic customers.

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... to sell Mr. and Mrs. Jones! A fur-  
nace they'll be proud of! Yes, you'll sell  
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In Syncromatic—Quality, Beauty, Safety  
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\*Profits? Yes!  
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## Long ago, Icarus proved that you can't fly in the face of Nature

*... and that's why Allen will NOT build a NO-Back-Draft Ventilator*

In ancient days, as the mythological tale of Icarus relates, you were likely to fall on your - ah - face - if you, like Icarus, defied the law of gravity. That law has never been repealed. Nature's laws have a way of staying in the books. You always have to pay high if you defy them. We are reminded of it every time we hear that someone has been offering a "no-back-draft" ventilator, and there have been many offered.

For about a quarter century The Allen Corporation has been wrestling with ventilation problems. We have piled up some valuable experience and we have arrived at some positive ideas about ventilation and ventilation products.

Recently specifications have been appearing, calling for ventilators that will not be subject to mechanical down-draft, or back-draft. What this statement means, is that wind blowing on top of the ventilator should not be able to make it back-draft. First of all, practically any ventilator made can be back-

drafted if installed with a negative static inside the building. Since nature abhors a vacuum, air rushes in through the ventilator, in the wrong direction, and attempts to satisfy the vacuum inside the building.

The other kind of back-draft is but rarely encountered in industry. It is the type of back-draft caused by installing a ventilator next to a high building, so that the wind, when coming from the proper direction, will swirl over the top of the adjacent building and down on top of the ventilator, causing it to back-draft.

It is not too difficult to build a ventilator to overcome these conditions, but the price in loss of efficiency that must be paid is a high one. We refer to a test report of the U. S. Bureau of Standards, dated as far back as 1921—and the principles have not changed. This report says in conclusion: "The most effective way of obtaining a large volume of air exhaust is by making use of the region of low

pressure produced at the back of a properly designed obstacle. It is best not to allow the air to enter the ventilator, for it must then be exhausted and will be exhausted at the expense of the air in the ventilator pipe."

All ventilators which are proof against mechanical back-drafting, rely upon the principle of induction above quoted, and therefore all of them must achieve the no-back-draft feature at the expense of capacity in the main ventilator pipe. That is the reason why Allen will not design a "no-back-draft" ventilator.

We consider the point of "no-back-draft" greatly over emphasized, and feel that a little horse-sense in designing the application of the ventilator will overcome the difficulty on those comparatively few occasions where back-draft conditions are encountered.

And so, you can feel assured that your ventilation problem will get our immediate and careful attention and we will tell you honestly whether you can most economically use gravity or power equipment or a combination of the two. *The Allen Corporation, 9751 Erwin Avenue, Detroit 13, Michigan.*

THE *Allen*  
ENGINEERED VENTILATION FOR INDUSTRY

C O R P O R A T I O N

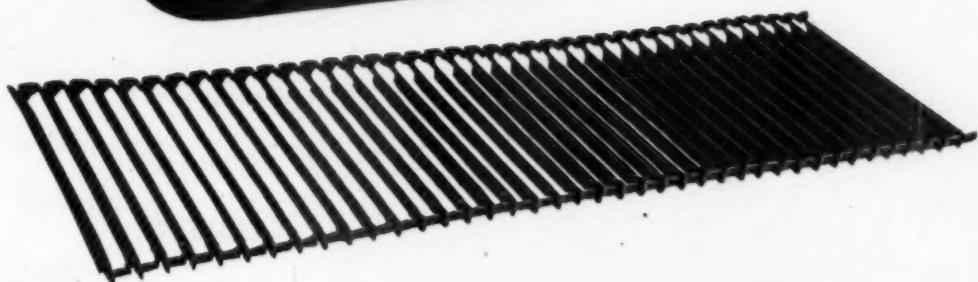
ALLEN

# MORRISON *Airstream*

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fabricate your blower assembly now avail-  
able. Write for your copy today.*

**MORRISON PRODUCTS, INC.**

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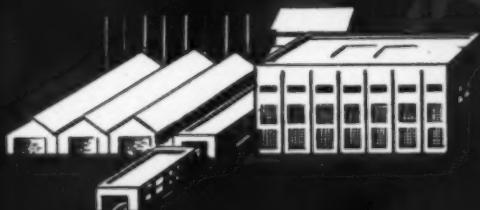
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Gentlemen:

We are very much pleased with the workmanship your men have shown in the installation of the last 19 Winkler Stokers which you have put into our various apartments.

It may be of interest for you to know that we formerly used oil in these buildings and then turned over to several makes of stokers, which have been operating for the last eight years, and which you have replaced with your Winklers.

The Winkler Stoker you installed last year has been put thru exhaustive breakdown tests and has proved to be very satisfactory. This warranted us placing the order for the additional Winkler Stokers.

In the coming season, it will be necessary for us to replace approximately the same number of stokers which we are sure will be Winklers.

We wish to thank you for your prompt service and also your personal attention devoted to this job.

Yours very truly,  
(NAME ON REQUEST)

### THE WINKLER FRANCHISE OFFERS THIS

The Winkler Franchise is not a meaningless scrap of paper. Distributors who qualify for it are carefully instructed in how to present the superior mechanical features of the Winkler Stoker and the all-around benefits of stoker-firing. They are started off with the Winkler Basic Business Set-up . . . drilled in all the fine points of successful stoker merchandising . . . and have participating rights in the Winkler Two-for-One Advertising Bonus Plan.

Business men are invited to write for "The Golden Age of Stoker Merchandising"—a booklet which shows graphically the profit potentials of the Winkler Franchise.



Winkler  
Industrial  
Hopper  
Model



Winkler Commercial  
Self-feed Model

# WINKLER

*fully automatic* STOKERS

U. S. MACHINE CORPORATION • LEBANON, INDIANA

U. S. Machine Corporation, Lebanon, Indiana  
Please give me full information on how to obtain a Winkler Franchise.

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# Only G-E dealers will enjoy this great sales advantage in tomorrow's busy heating market

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It is, of course, the famed wartime research and engineering experience of General Electric. New knowledge that, in normal times, would have taken years to acquire, yet which G-E with its facilities for research was able to assemble, study and apply at war's tempo.

You'll appreciate what this can mean, profit-wise, when the General Electric heating units of postwar appear. They'll be quieter, more compact and efficient, easier to install . . . and easier to sell! In tomorrow's heating market, the dealer with the G-E franchise will have a decided jump on competition. *General Electric Company, Heating Division, Section 5533, Bloomfield, New Jersey.*

★ BUY . . . and hold . . . WAR BONDS ★



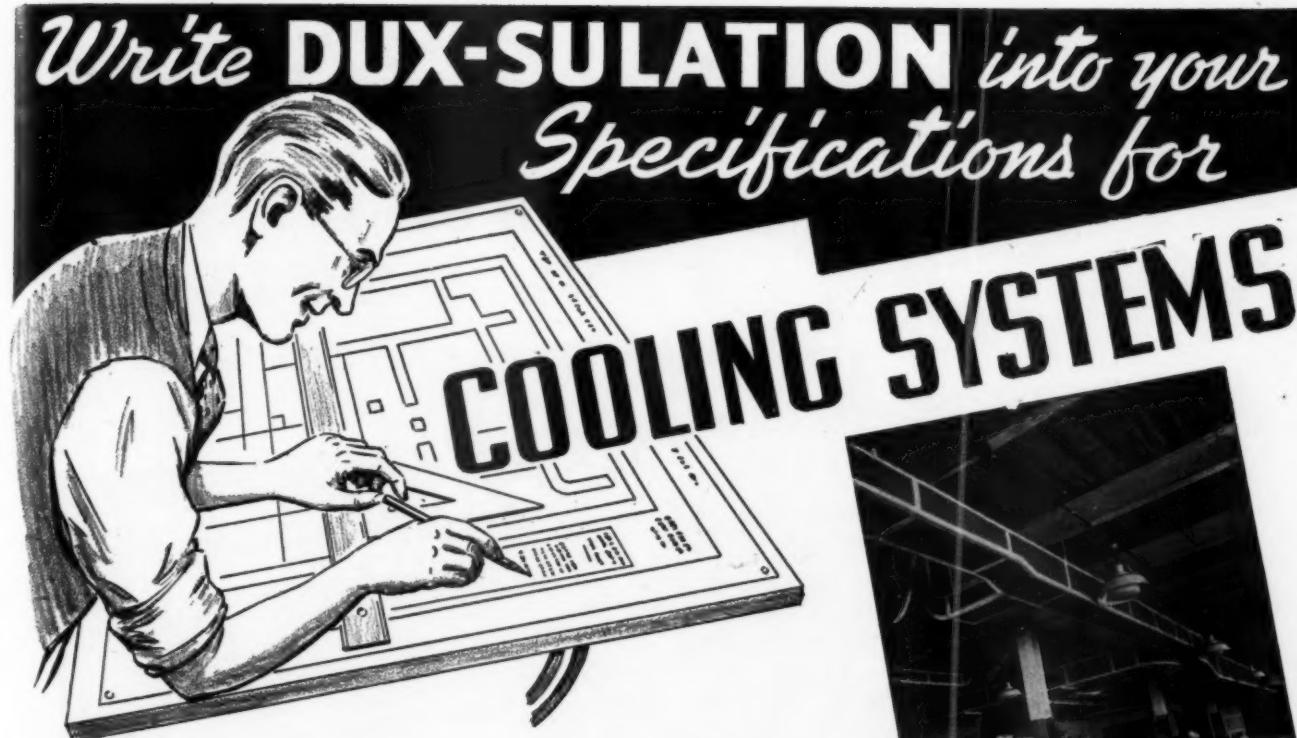
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"CONTROLLED WEATHER"



# COOLING SYSTEMS

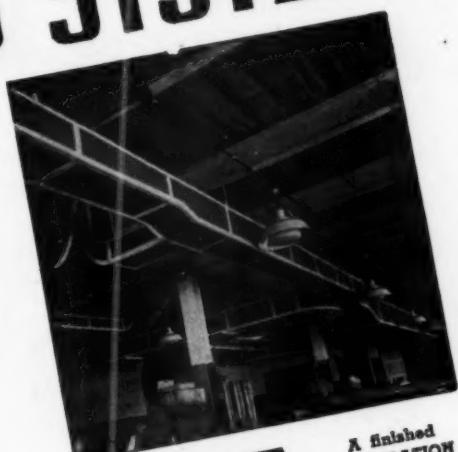
The best Engineered Job cannot function efficiently unless all the ducts are insulated. That is why leading engineers are writing-in *asbestos-protected* DUX-SULATION at the time the plans are drawn up. Top man-power-efficiency calls for DUX-SULATION on every Heating, Ventilating or Cooling System this summer.

"Conditioned air" in office laboratory and plant with sound absorption and controlled temperature is easily obtained by covering all metal ducts with all-purpose DUX-SULATION. In addition you get lower power cost and practically no maintenance.

DUX-SULATION deadens metallic sounds and when applied to inside of duct quiets air borne noises and reduces vibration.

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Immediate shipment in any quantity. Get the most out of your Air Conditioning System. Write for Bulletin No. 407-A.



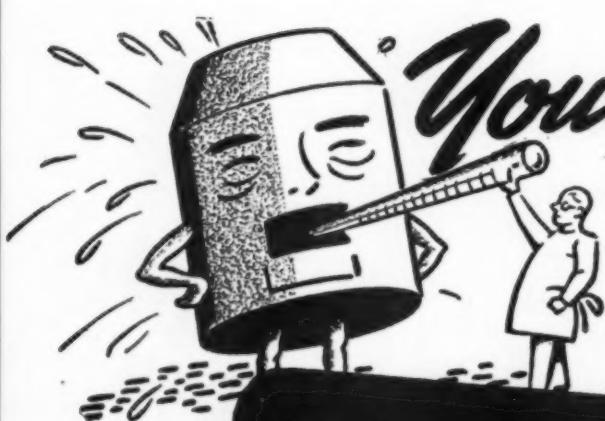
A finished  
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job is attractive  
and efficient.

A flexible insulating blanket  $\frac{1}{4}$ " thick having a K factor .27 B.T.U. Comes complete with corner tape and adhesive for cementing on to sheet metal duct work. DUX-SULATION comes 36" wide in a roll containing 100 square feet. Easy to apply and a very efficient insulation against temperature losses, condensation and noise travel. Will not rot, chip or crack.

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Specify asbestos pro-  
tected DUX-SULATION  
on all your duct work  
for better performance.



# You're the Doctor..

**When it comes to  
FUEL SAVINGS  
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**"Prescribe" THE  3-PIECE AUTOMATIC  
HEAT REGULATOR SET**

Includes Thermostat, Limit Control, Damper Regulator Motor, all necessary accessories — NO EXTRAS to buy! More than ten years of successful use in thousands of homes and as standard equipment by leading furnace manufacturers. Carries the same Dependability reputation as all A-P precision-built controls.

*Note*  
THESE OUTSTANDING CONSTRUCTION AND  
OPERATING FEATURES OF THE A-P AUTO-  
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### MODERN WALL THERMOSTAT

Modernistically designed, the A-P Thermostat controls room temperature within 1° variation above or below setting. All operating parts in special composition base, easily mounted on wall without disfiguring — needs only 1/4" hole for cable. Accurately calibrated thermometer in cover. Needs only convenient manual setting for steady heat control.



### LIMIT CONTROL

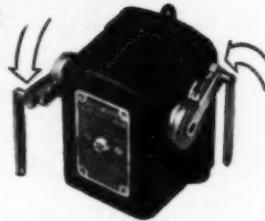


Important in preventing overheating and consequent fuel waste, this limit control stops built-up furnace heat from causing room temperature to coast way above thermostat setting. Convenient dial can be set according to season and outdoor temperature.



### DAMPER REGULATOR

Compact and sturdy, A-P Damper Regulator Motor has exceptional lifting power. Gears and pinions of high grade steel — all electrical connection carefully soldered — corrosion-resistant for basement use. Built for long service. Motor requires no attention except to oil once a year.



**Exclusive Relatching Feature.** Special spring latch knob is provided on each of the two arms of the A-P Damper Regulator, permitting dropping of arms for closing the draft and check when stoking fire. Arms automatically relatch at the next motor operation. An important safety feature.

**ACCESSORIES** — included in complete set: Transformer, conductor cable, plated non-rusting furnace chain, cable wires, rust-resistant pulleys, insulated staples, screws and snap links, and complete instructions.

Recommend the complete 3-Piece A-P Automatic Regulator Set for steady comfort, convenience, years of fuel saving furnace and boiler operation. Competitively priced.

*Write For Details.*

**AUTOMATIC PRODUCTS COMPANY**  
2470 N. Thirty-Second Street • Milwaukee 10, Wisconsin



## DEPENDABLE CONTROLS

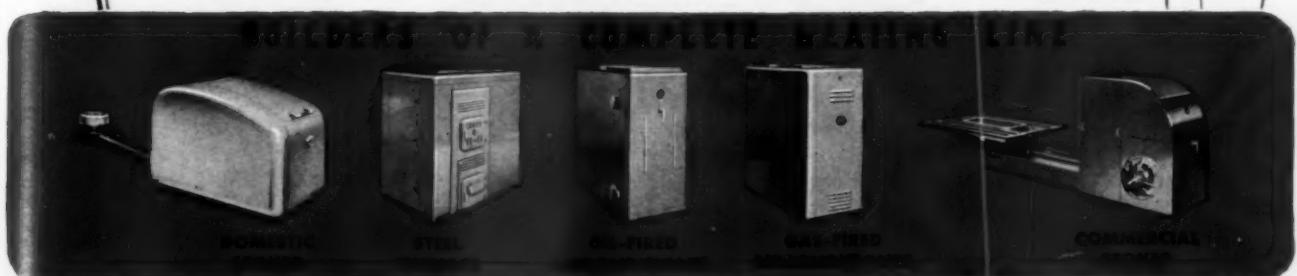
FOR HEATING • AIR CONDITIONING • REFRIGERATION

# CONCO heat



*"New"*—THE MAGIC WORD for POSTWAR PLANNERS

It's NEW—this CONCO DOMESTIC STOKER—not just in its streamlining and colors, but in basic engineering, too. Look at these NEW advantages—talking points to sell consumers: 1) No shear pin, no bothersome clutches. An electrical "watchdog" stops the stoker until any obstruction is removed. 2) There's extra wear in the powerful, silent Inter-planetary transmission. Eight teeth, not just one, carry the load. 3) Coal Feed Selector, adapts the stoker to individual requirements by providing an infinite number of coal feeds. 4) The streamlined Hopper holds more coal, yet filling height is actually lower. Forced ventilation prevents back gassing. Yes, these and many other features, like the finest of electrical controls, mean SALES APPEAL! Write today.



CONCO ENGINEERING WORKS • MENDOTA, ILLINOIS

# ACCURACY of CONTROL



is not affected by

## Temperature Changes in Surrounding Areas



### 8 EXCLUSIVE FEATURES OF WHITE-RODGERS HYDRAULIC-ACTION TEMPERATURE CONTROLS

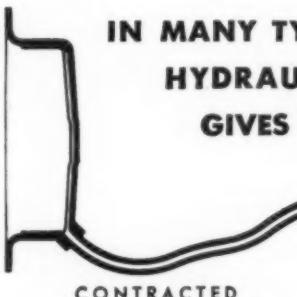
1. May be mounted at any angle or position, above, below or on level with control point.
2. Hydraulic-Action principle incorporating solid-liquid-filled bulb and capillary provides expansion force comparable to that of a metal bar.
3. Diaphragm motion uniform per degree of temperature change.
4. Power of solid-liquid charge permits unusually sturdy switch construction resulting in positive contact closure.
5. Heavier, longer-wearing parts are possible because of unlimited power.
6. Dials are evenly and accurately calibrated over their entire range because of straight-line expansion.
- ★ 7. Controls with remote bulb and capillary are not sensitive to change in room temperature. Accuracy of control is not affected by temperature changes in surrounding area.
8. Not affected by atmospheric pressure. Works accurately at sea level or in the stratosphere without compensation or adjustment.



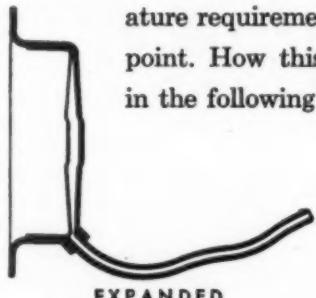
### WHITE-RODGERS HYDRAULIC-ACTION REMOTE BULB CONTROLS ARE NOT AFFECTED BY CHANGES IN ROOM TEMPERATURE

When controls must be located under difficult conditions, the remote bulb and capillary of White-Rodgers Hydraulic-Action controls provide the answer. The fluctuating temperature of the area in which the control is located *does not affect* the operation of the control. The design of the sensitive element, together with the expansive force of Hydraulic-Action, make this possible:

### IN MANY TYPES OF APPLICATION THIS HYDRAULIC-ACTION PRINCIPLE GIVES THE ONLY SURE RESULT



Above is a cross section of the diaphragm and part of the liquid-filled capillary. In this view the liquid has contracted, releasing the pressure on the diaphragm and causing the switch contacts to function.



In this cross-sectional view, the liquid charge of the capillary has expanded with a rise in temperature. The positive force of this hydraulic action forces the diaphragm outward and causes the switch contacts to function.

The remote bulb, containing the major portion of the solid-liquid charge, fully interprets the temperature requirements of the control point. How this works is shown in the following illustrations.



Actual-size illustration of the White-Rodgers diaphragm body, the actuating element of every White-Rodgers temperature control. It is designed as to exert full pressure at the point of contact with the switch mechanism.

WHITE-RODGERS ELECTRIC CO.  
1215C CASS AVENUE ST. LOUIS 6, MISSOURI



Controls for Refrigeration • Heating • Air-Conditioning



Year round Viking Air Conditioning (heating and cooling) is a postwar goal of many home-owners.



A Viking boiler, for steam, hot water or vapor, can provide this home with fully automatic heating.



The Viking "Utility Room" automatic furnace with forced air circulation is ideal for homes without basements.



An automatic Viking floor furnace will keep this small home economically and cozily warm.



For remodeled or new homes,

these Viking products bring you sales throughout the year.



Year 'round Air  
Conditioners



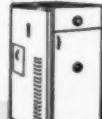
Floor  
Furnaces



Furnaces



Space  
Heaters



Boilers



Room  
Coolers



Utility Room  
Furnaces



Conversion  
Burners



Water  
Heaters

PLAN TO SELL  
**VIKING Automatic Heating  
and Cooling**  
*and get more business*

The building of new homes and remodeling of old ones will bring you all the business you can handle postwar—if you will offer the modern kind of equipment your customers will demand.

Because home owners and builders alike will insist on having advanced, up-to-date equipment, the cream of your sales will be in Viking's field of fully automatic heating and year round air conditioning. That's why we say "Plan now with Viking."

#### VIKING OFFERS A COMPLETE YEAR'ROUND LINE

Take a good look at the Viking line. It offers you everything from space heaters to year 'round heating-cooling systems. The line includes furnaces, boilers, mechanical cooling, automatic oil burning water heaters, room coolers, floor furnaces and conversion burners. And Viking merchandise is backed by a sound plan of wholesaler-dealer distribution.

If you want to be in position to successfully compete for the best sales in your community, write for the Viking full line catalog today.

**VIKING MFG. CORPORATION**

1601 U. S. BLDG., DAYTON 2, OHIO



## KING WINTER... NO MATCH FOR RYBOLT HEATING

KING WINTER really put the royal "bee" on heating equipment this season. Continuous heavy firing during weeks of near-zero weather, complicated by the scarcity of good fuel and the patriotic effort to conserve it has put an extra burden on heating equipment, the like of which has not been experienced for many years.

But good heating equipment comes through such severe tests with flying colors. Like a bridge, it is designed and built to withstand extremes of strain and hard unremitting use with a wide margin of safety.

It is this wide margin of unfailing perform-

ance under severe conditions and over a long period of time that has distinguished RYBOLT heating equipment. For more than thirty years RYBOLT units have been engineered to provide extra durability and dependability.

The RYBOLT Postwar line now being readied embodies the same substantial principle of the liberal margin of extra performance *plus* advanced improvements and refinements that set it apart from and above ordinary equipment.

Tough as he may come, King Winter will prove no match for RYBOLT heating.

**BUY AN EXTRA WAR BOND**



**THE RYBOLT HEATER COMPANY**  
615 MILLER STREET



ASHLAND, OHIO

# NO SKIMPING ON MATERIALS



## *That's a Manufacturing Policy for* **SUNLIGHT MOTORS**

There is no short-cut to producing a quality electric motor. Every part and every unit must represent full measure in the quantity and quality of materials used—full measure in care and workmanship. There can be no skimping anywhere.

In the past 28 years, more than 8,000,000 Sunlight electric motors have been built—and into every motor has gone extra protection to safeguard its performance and give it longer wear-life. Sunlight motors, for instance, deliver up to three times their rated capacity, to give extra power during starting periods. Full-gauge copper wire is used, with extra-heavy coatings to provide better insulation on all windings. Bearings are diamond-bored, and journals are self-oiling, of cast bronze. These and dozens of other features account for the tremendous acceptance of Sunlight-powered appliances everywhere. Manufacturers and dealers know they can depend on Sunlight motors for full measure *plus*.

**Packard Electric Division, General Motors Corporation, Warren, Ohio**  
**Dependable Appliance Motors for Twenty-Eight Years**



### **SUNLIGHT MOTORS FOR:**

**AIR COMPRESSORS  
WASHING MACHINES  
POWER-DRIVEN BENCH TOOLS  
IRONERS  
MILK SEPARATORS  
MILKING MACHINES  
FURNACE BLOWERS  
STOKERS  
OIL BURNERS  
WATER PUMPS  
REFRIGERATORS  
VENTILATORS  
AND MANY  
OTHER APPLICATIONS**

**KEEP BUYING  
WAR BONDS**

BLACK ANNEALED WIRE • BATTEN STRIPS • SHINGLES  
 CONDUCTOR PIPE • CUTOFFS • OUTLETS • END CAPS  
 POLISHED-BLUED SHEETS • ROOFING, VALLEYS, GUTTERS  
 ELBOWS • GALVANIZED SMOOTH WIRE • RIDGE ROLL  
 FUNNELS • CORNER SHIELDS • HANGERS  
 HEATER TUBES • LEAD HEAD NAILS  
 MITRES • CONDUCTOR PIPE HOOKS  
 FINIALS • ELBOWS  
 FLUE THIMBLES • EETS  
 CONNECTORS • GS  
 ELBOWS • TS  
 COLLARS • PE  
 DAMPERS • RS  
 WALLS • IPE  
 STEEL • INGS  
 ROOFING • FLASHING  
 TEE JOINTS • HEATER PIPE TIN  
 CONNECTIONS • LEAD WIRE • LONG TERNE SHEETS  
 CURVED ARCHES • GUTTER SPIKES • FLUE STOPPERS  
 CROSS CORRUGATED SHEETS • WALL TIES • WALL PLUGS  
 GALVANIZED SHEETS • ROOF EDGING • FURNACE PIPE  
 FLASHING • WEATHERBOARD SIDINGS • TERNE ROLLS  
 STOVE PIPE ELBOWS • STOVE PIPE • CASING COLLARS  
 DRAW BANDS • ROOF DECK • TERNE PLATE • TIN PLATE



*Most Any Day. Now!*

Wheeling Sheet Metal products will again take their places on the Main Streets of America. For 55 years Wheeling has been producing high grade steel products and has never deviated from this policy. The Wheeling trademark looms larger in the 55th year of business than ever before.

**Wheeling Corrugating Company**

WHEELING, WEST VIRGINIA

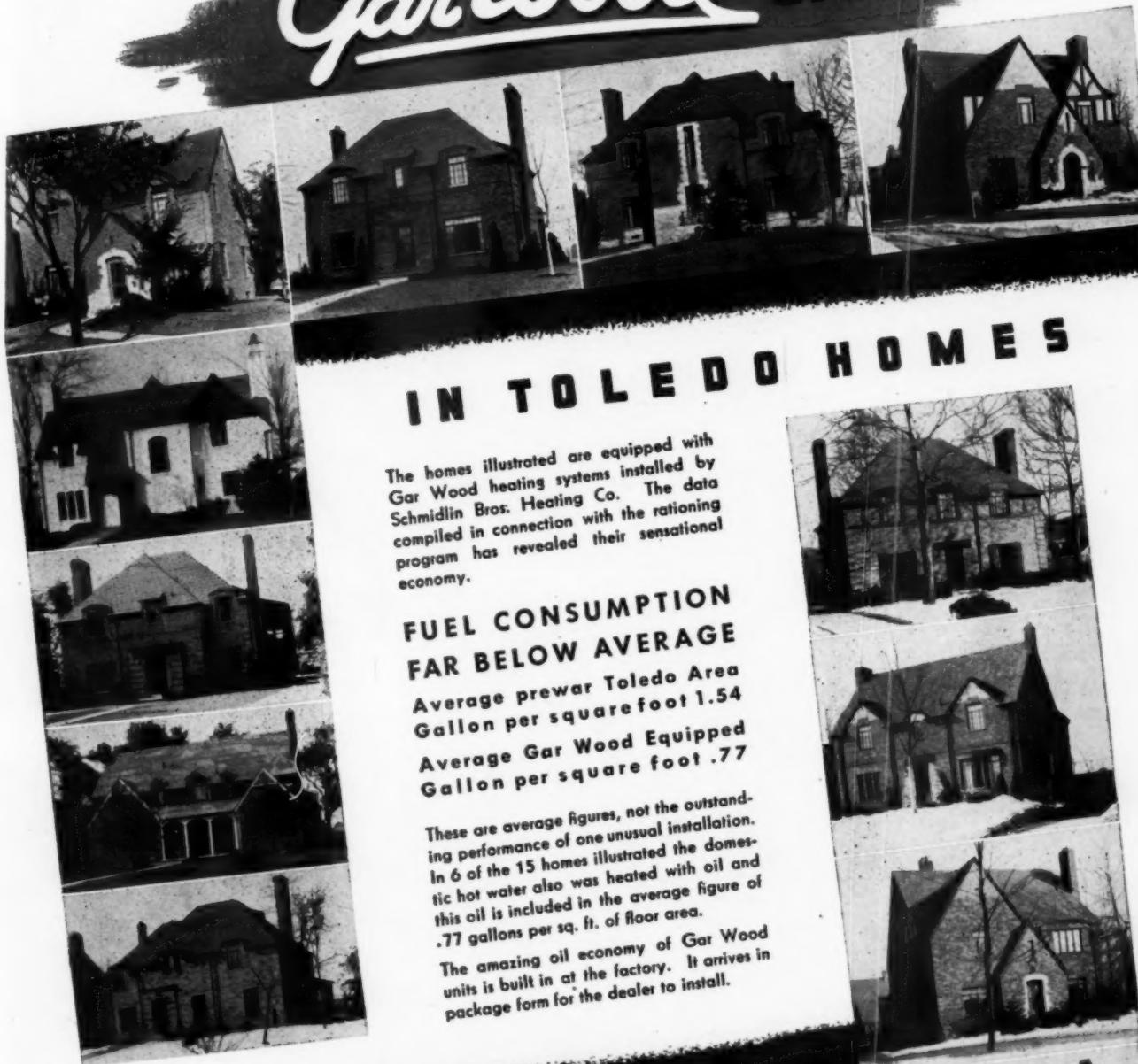
OFFICES AND WAREHOUSES IN PRINCIPAL CITIES



Safe-T-Mesh • Flattened Mesh •  
 Walkway Mesh • Skywalk Mesh  
 • Gratings • Reinforcing Mesh •  
 Cement Gun Mesh • Highway  
 Mesh • Bank Vault Mesh • Stucco  
 Binder Mesh • Burial Vault  
 Mesh • Welded Wire Reinforc-  
 ing Fabric • Expanded Metal  
 Fasteners and Accessories

The complete line of Wheeling Sheet Metal products has been augmented by Steelcrete Expanded Metal. Expanded Metal products are available now, subject to government regulations.

# RATIONING PROVES *Gar Wood* EFFICIENCY



## IN TOLEDO HOMES

The homes illustrated are equipped with Gar Wood heating systems installed by Schmidlin Bros. Heating Co. The data compiled in connection with the rationing program has revealed their sensational economy.

### FUEL CONSUMPTION FAR BELOW AVERAGE

Average prewar Toledo Area  
Gallon per square foot 1.54

Average Gar Wood Equipped  
Gallon per square foot .77

These are average figures, not the outstanding performance of one unusual installation. In 6 of the 15 homes illustrated the domestic hot water also was heated with oil and this oil is included in the average figure of .77 gallons per sq. ft. of floor area.

The amazing oil economy of Gar Wood units is built in at the factory. It arrives in package form for the dealer to install.



INVESTIGATE THE GAR WOOD FRANCHISE FOR YOUR COMMUNITY  
*Gar Wood* HEATING DIVISION  
GAR WOOD INDUSTRIES, INC.  
DETROIT 11, MICHIGAN





Coal is fed from bin  
furnace. Ashes are  
removed automatically  
by patented vertical  
motor to sealed container.

DVL Stoker installed in water-tube  
furnace. Can also be installed  
in hot water and steam boiler.

# WHY THIS IS THE WORLD'S MOST EXCLUSIVE STOKER PICTURE

Here is a picture of the only successful completely automatic bituminous bin-feed coal stoker, that burns oil or gas. Manufactured for over 10 years, and with thousands in use—here is a stoker line that will be worth your time to investigate ...think of selling a stoker so automatic that it feeds its own coal from bin to furnace, burns low cost slack coal with the highest efficiency, and then removes the ashes to a dust-proof container...if you are thinking about a dealership for that big stoker market—why not send in the coupon—there still are some good territories open.

**POCAHONTAS FUEL COMPANY, INCORPORATED**  
Stoker Division: 338 EAST 131st STREET • CLEVELAND 8, OHIO

# POCAHONTAS

Gentlemen:  
Please send me full information

Name \_\_\_\_\_

Address \_\_\_\_\_

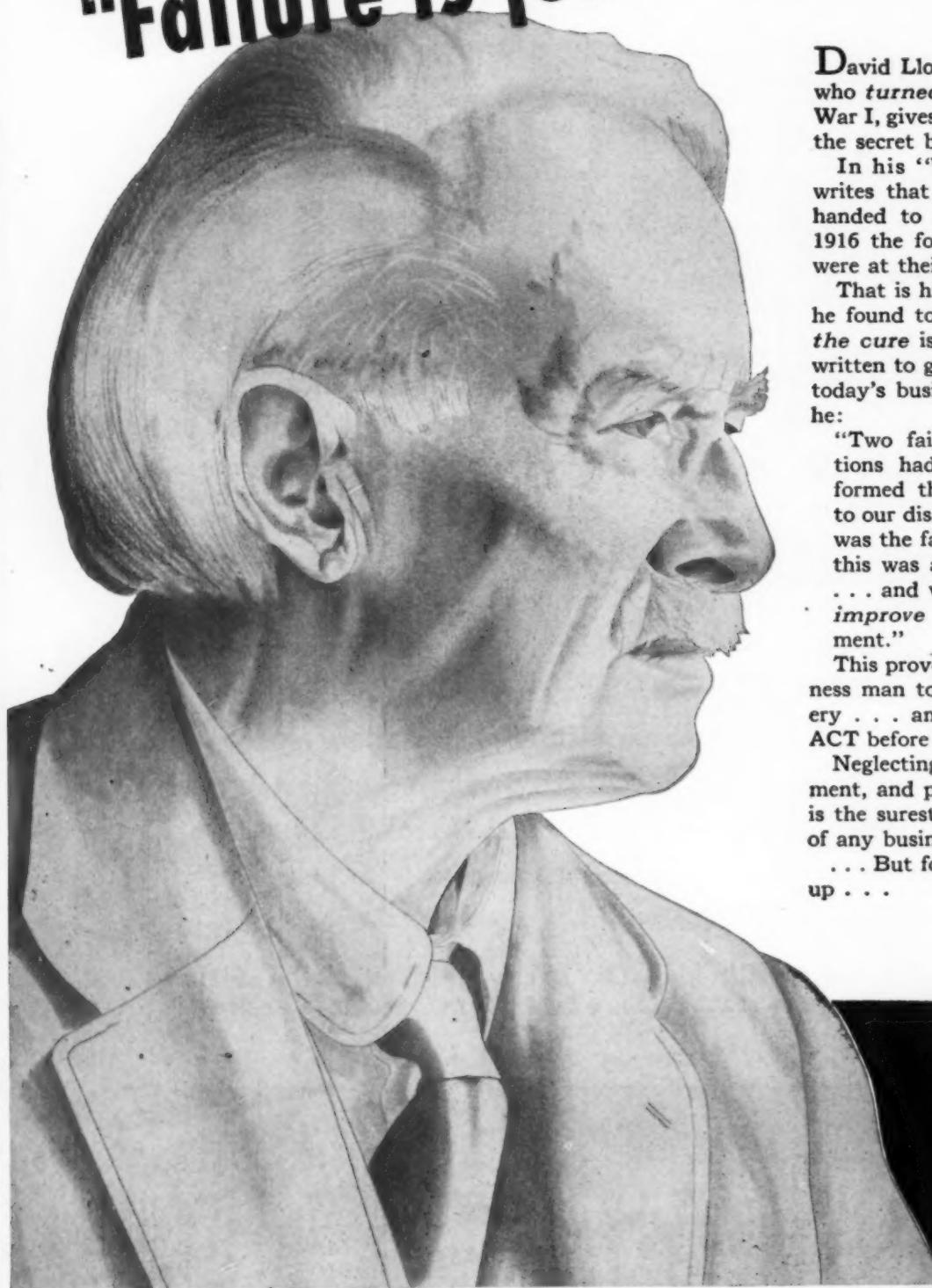
City \_\_\_\_\_

State \_\_\_\_\_

338

*then he said to himself*

**"Failure is just a symptom"**



David Lloyd George, the man who *turned the tide* of World War I, gives to postwar planners the secret behind that turn.

In his "War Memoirs" he writes that when the war was handed to him at the end of 1916 the fortunes of the Allies were at their lowest ebb.

That is history . . . but what he found to be *the cause and the cure* is as fresh as though written to guide the strategy of today's business planners. Says he:

"Two failures on key questions had completely transformed the military position to our disadvantage. The first was the failure to realize that this was a war of machinery . . . and we had neglected to *improve* the Allied equipment."

This proves he is a good business man to make that discovery . . . and a better man to **ACT** before it is too late.

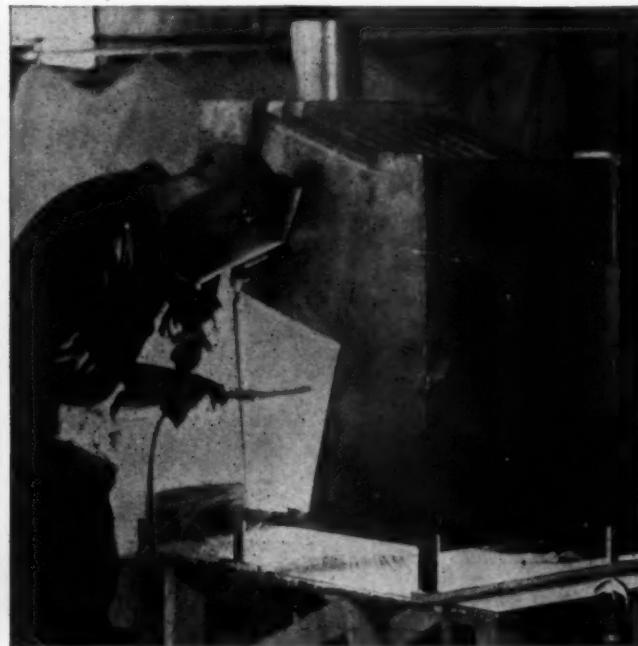
Neglecting to improve equipment, and production, and cost is the surest road to the valley of any business curve.

. . . But for climbing out, and up . . .



# "IMPROVEMENT...the key," he says

**LOOK, "L.G."**, how recourse to arc welding improves the design, manufacture and operation of warm air furnaces . . . provides the key to better business for manufacturers and contractors:



*Improved by Arc Welding. Combustion drum and flue section of warm air furnace embodying 12 to 20 gauge sheet.*

## For Better Furnaces at Lower Cost:

**W**ELDED construction, skyrocketed in popularity during the war, will be in great demand for furnaces. This feature will be a potent business-getter for manufacturers, contractors and dealers for good sound reasons:

Arc welded joints . . . stronger than the parent metal . . . have higher resistance to pressure and temperature variations than conventional construction

and are permanently tight.

Their direct connection avoids punching and riveting . . . simplifies preparation of parts, cuts fabrication costs to the bone.

The Lincoln Engineer nearby will gladly help you apply arc welding to the improvement of sheet metal products of all kinds.

THE LINCOLN ELECTRIC COMPANY • DEPT. L-2 • CLEVELAND 1, OHIO

*America's greatest natural recourse*

## ARC WELDING

# J. P. Wilkinson

Owner,  
Preston Appliance & Furniture Co.  
Oxford, Nebraska



## Tells Why He Took On Coleman Oil Heater Line: "We Chose Coleman Because Of Better Heating Service . . . . Our Sales Increased Rapidly!"

"When we decided to take on a line of oil heaters," relates Mr. Wilkinson, "we covered the field, determined to choose one that was efficient in every way, free from service, built by a reliable manufacturer. We chose Coleman! Result—our oil heater sales increased rapidly and our Coleman Department developed into one of our most profitable departments. Every

customer became a satisfied customer—the choice in our locality is practically unanimous for Coleman."

Coleman franchise dealers are being appointed now by America's leading distributors for post-war sales of these Coleman Heating Appliance lines: Oil Heaters; GAS, OIL and LP-gas Floor Furnaces, Water Heaters, and Central Heat Plants. This franchise is awarded

to aggressive dealers who can qualify and handle the volume of Coleman business they can easily develop. Write us for the name of your Coleman distributor, who can tell you the complete story of the Coleman opportunity in the waiting billion-dollar home-heating market. Coleman Lamp and Stove Co., Dept. AA-24X, Wichita 1, Kansas.



THE "HOT" NAME IN HOME HEATING



THE COLEMAN LAMP AND STOVE COMPANY • WICHITA 1 • CHICAGO 11 • PHILADELPHIA 8 • LOS ANGELES 54 • TORONTO, CANADA





# 3 Specialists WORTH KNOWING

● Steel sheets identified by these trademarks are specialists, made to meet everyday needs particularly well.

Popular SUPERIOR GALVANIZED is uniformly tempered for good workability. It handles well, solders well and is highly uniform—ideal where you need a commercial galvanized sheet. Distinctive CHECKERCOAT is galvanized with bright, checkered spangles. It's a fine sheet where you want smart appearance. Long lasting COPPERIOR is made of copper steel for greater rust resistance.

Both Continental Steel Corporation and its subsidiary, The Superior Sheet Steel Company, produce these well-known galvanized sheets. Ask your jobber about them today.



**CONTINENTAL**  
STEEL CORPORATION  
GENERAL OFFICES • KOKOMO, INDIANA

PRODUCERS OF:  
THE SUPERIOR SHEET STEEL COMPANY,

MANUFACTURER'S WIRE: Bright, Annealed, Galvanized, Coppered, Tinned, Liquor Finished, Lead Coated, Special wire, etc. Also Chain Link Fence, Nails, etc.

STEEL SHEETS: Black, Galvanized, Hot Rolled Annealed, Hot Rolled Pickled, Long Terne, Copperier, Lead-Sealed, Galvannealed, Super-Metal, etc.

DIVISION • CANTON, OHIO

# TRADITION

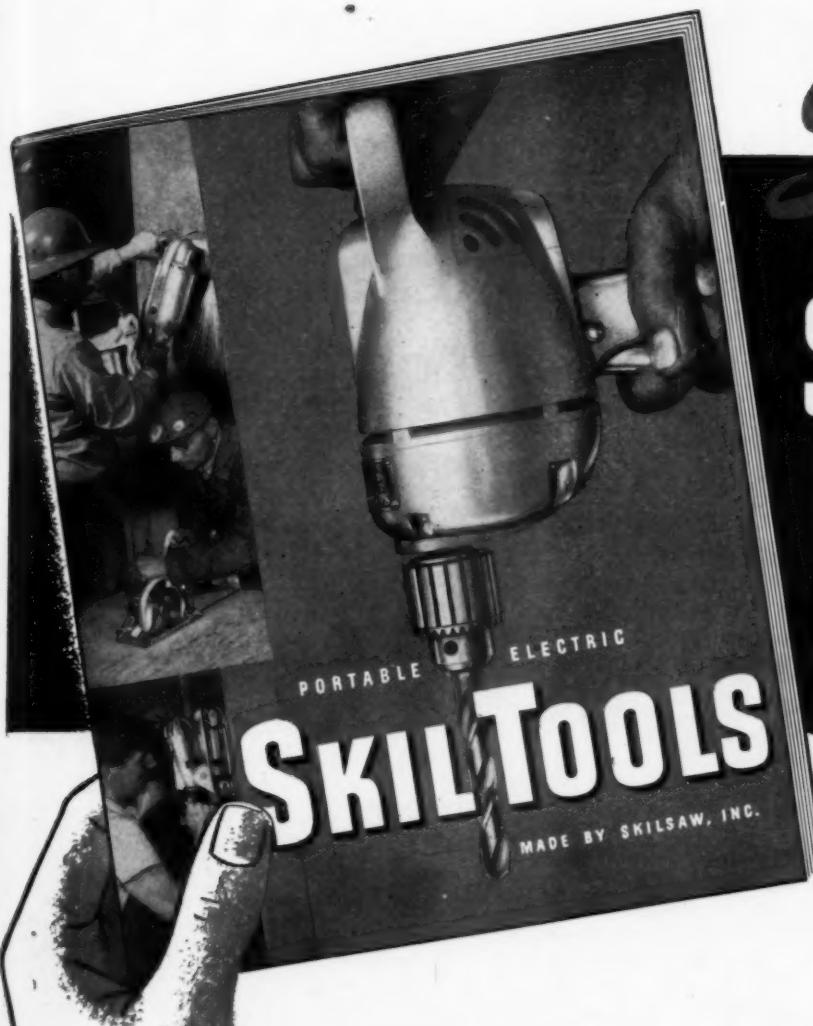


Tradition is something to be proud of only if confined to intangibles. For instance, Morrison is proud of the tradition that all their products must be of top quality. That will remain. But the old traditions that furnaces must be unsightly, that they must be designed to utilize obsolete machinery and equipment, that they must be merchandised hit and miss . . . those traditions must go. The new MOR-SUN line of modern furnaces will retain the old Morrison quality . . . but will introduce Production, Performance, Beauty and Merchandising hitherto unknown in the furnace industry! MOR-SUN will be worth waiting for!

**MORRISON STEEL PRODUCTS, Inc.**

BUFFALO 7,  
NEW YORK

AMERICA



*Send*  
**FOR THIS NEW  
 SKILTOOL  
 CATALOG  
 just off the press!**



**SPECIAL  
 SECTION**

**on Care and Operation  
 of Electric Tools**

Every owner, every operator of portable electric tools needs this manual to help make tools do their job better and last longer. The SKILTOOL Maintenance Manual in the SKILTOOL CATALOG is packed full of useful information on the care and economical use of *all* portable electric tools. Whether you use SKILTOOLs exclusively... or whether you also use other makes... you'll save money and delay the need for tool repair by reading and heeding the advice in the new SKILTOOL Maintenance Manual and Catalog. It's yours for the asking. Mail the coupon today!



**SKILSAW, INC.**

5033-43 Elston Avenue, Chicago 30, Illinois

Please send..... free copies of your new SKILTOOL Catalog with Special Tool Maintenance Section to:

Name.....

Address.....

City..... State.....

**POR TABLE ELECTRIC**

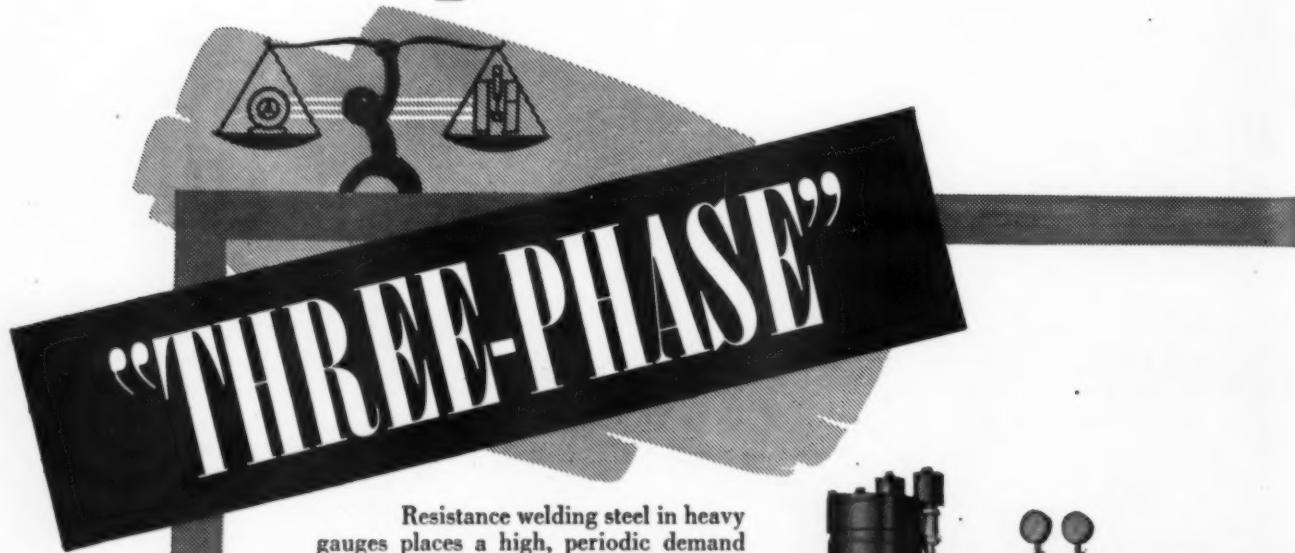
**SKILTOOLS**

MADE BY SKILSAW, INC.

5033-43 Elston Ave., Chicago 30, Ill.

Factory Branches in All Principal Cities

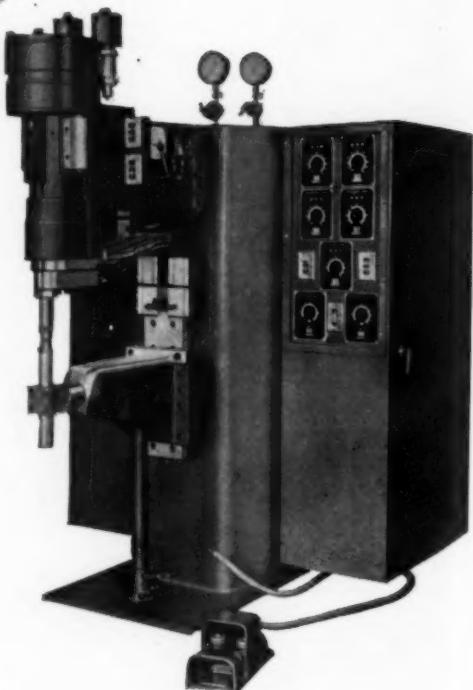
**NOW... RESISTANCE WELDING WITH AN  
evenly balanced  
three-phase load...**



Resistance welding steel in heavy gauges places a high, periodic demand on the power supply. Conventional a.c. welders — designed for single phase — seriously unbalance the load, cause flicker in the line and often require expensive substation and distribution equipment.

Sciaky "THREE-PHASE" welders employ a principle enabling them to take practically an equal amount of current from each phase of the power supply, thus operating on a *balanced load*. An ideal low frequency welding current is produced first by converting to d.c. then reconverting to an alternating impulse. This system also provides operation at high power factor (80 to 85%) and decreased actual power demand.

*The Sciaky "THREE-PHASE" Welder illustrated is designed for high quality spot welding on mild and stainless steels and rusty and scaly stock in thicknesses from .032" to .312". Rating is 100 KVA at 50% duty cycle, operating at 85% power factor. Speed on two thicknesses of .062" mild steel is 90 spots per minute. Special features include Variable Pressure with a maximum pressure of 5,000 lbs.. and adjustable Preheating Current.*



Write for bulletin 204-A describing fully the principle of the Sciaky "THREE-PHASE".

**SCI AKY** **BROS.**

Manufacturers of a Complete Line of AC and DC Electric Resistance Welding Machines  
**4915 West 67th Street**

Offices in Detroit, Los Angeles, Washington, Cleveland and New York

Representatives in Principal Cities

In England: Sciaky Electric Welding Machines, Ltd., London

In France: Sciaky S. A., 13, 15 Rue Charles Fournier, Paris

# American Builder said it!

Better homes rank first in any consideration of the nation's standard of living. They contribute more than all others.

## They expect a lot

So when planning for the future, it seems obvious that the building industry must promise the American people better planned, better equipped, and finer living accommodations than ever in history. As an industry we should make a higher standard of living a paramount goal. Not only for the well-to-do but for people of low income. In fact, it is in low cost housing that the greatest emphasis must be placed.

For the truth is that the American public writers, and public

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## ...and they'll expect modern-as-the-minute HEATING



Here skillful engineering, modern design and careful construction means real long-lasting heating efficiency. 1. Complete factory assembly on most models. 2. Unexcelled Amplifire burners. 3. Long-life Cast Iron Multi-Thermex Tubes. 4. Large capacity blower and filters. 5. Famous Janitrol controls. 6. Ready accessibility of all operating parts and controls. 7. Positive Thermo-drip humidifier.

WE at Surface Combustion have always insisted that you can't provide real home comfort without completely automatic heating.

And for over 30 years Janitrol has directed every effort to make available the finest gas-fired heating equipment that modern engineering and research skill can produce.

This unique experience has resulted in developing equipment that is today unmatched in advanced design and performance. This has been Janitrol's contribution to a higher standard of living . . . it promises an even greater measure of comfort and heating economy for more people when wide scale building gets under way again.

The compactness and simplicity of design, plus the great flexibility of Janitrol Gas-Fired equipment will make it practical to install these units in modern designed homes. Continued heating economy will be assured by the combination of high combustion efficiency, proven performance and reasonable gas rates.

Remember, no other gas heating equipment has all the advantages Surface Combustion engineers have combined in Janitrol!

For further information on the complete line of heating equipment Janitrol will offer as soon as possible, write Surface Combustion, Toledo 1, Ohio.

## GAS-FIRED HEATING EQUIPMENT





THEY'RE MADE THE  
*Best way...*  
TO DO THE  
*Best Work*

Remember the fast-selling line of  
**CRESCENT SCREWDRIVERS?** Once they  
were a familiar sight on thousands of Hard-  
ware dealers' displays. Now they are help-  
ing our soldier and sailor mechanics all  
around the world. But some day, they will  
be back at their old familiar haunts . . .  
helping to do the job of building better  
things in a better, happier world.

**CRESCE**NT TOOL COMPANY, JAMESTOWN, N. Y.



# A new standard for better heating

## "Coordinated Controlled Heating"

*Controls Preselected by Your  
Manufacturer as an Integral Part  
of His System and Sold Under His  
Name... Give Maximum Perform-  
ance and Freedom from Service.*

### THE NEW OPPORTUNITY FOR THE HEATING INDUSTRY

Public acceptance and high sales volumes came to other industries, such as automobile, radio and refrigeration, only when accessories were carefully preselected and sold as a part of a complete factory package under one trade name.

Automatic controls, carefully preselected and coordinated with the heating unit, provide new standards of performance, freedom from service, and assure the user of maximum economy and heating comfort. This is the heating industry's great opportunity to increase public acceptance and sales volume.

### WHAT "COORDINATED CONTROLLED HEATING" MEANS

Efficient performance in any system results only from the proper coordination of controls to the particular design features and combustion characteristics of the individual heating plant. "Coordinated Controlled Heating" means not only superior performance resulting from engineering the heating plant and controls as an integral unit—but assures more successful selling as well. "Coordinated Controlled Heating" means selling only one name—the heating manufacturer's—thereby strengthening the sales story and eliminating confusion from your prospect's mind.

PRESELECTED CONTROLS  
SOLD SOLELY  
UNDER ONE TRADE NAME

**Coordinated  
Controlled  
Heating**

ASK YOUR HEATING MANUFACTURER TO PRESELECT AND PROVIDE  
COORDINATED CONTROLS ON EVERY UNIT HE PRODUCES FOR YOU  
...INSTALL ONLY CONTROLS BEARING HIS TRADE NAME.



**Perfex**  
CORPORATION

500 W. OKLAHOMA AVENUE • MILWAUKEE 7, WISCONSIN

MANUFACTURERS OF AUTOMATIC CONTROLS BEARING TRADE-MARK NAMES OF LEADING PRODUCERS OF HEATING SYSTEMS



As winter weather conditions change, the amount of heat delivered by the heating plant should be changed. By controlling the air temperature in the duct system, the amount of heat *can be changed*. . . . In order to provide true indoor comfort, it is essential to have continuous movement of properly heated air. The continuous delivery of air, heated to a temperature

D-47

in keeping with the outdoor temperature, is attained with the Mueller Season-Stat. . . . This is just one of the many benefits you gain with a *basically correct* heating system — one that treats and handles *air*, and can be equipped for purification, cooling, and other features. . . . Plan now to specialize on Climatrol systems, for success in your post-war business.



especially designed  
for the chosen fuel  
— gas, oil or coal  
— equipment for homes  
of every size, type, and  
price range—old or new.

C. J. Mueller Furnace Co.  
910 W. Oklahoma Avenue  
Milwaukee 7, Wisconsin

Member

**MUELLER** *Climatrol*  
Reg. U. S. Pat. Off.  
HEATING AND WINTER AIR CONDITIONING



# Why Sheet Steel?

Why sheet steel for your postwar product, or contract job?

Because it's not only the cheapest, most easily-worked material—it's also the one that's naturally adapted to the widest range of applications. Sheet steel is ductile in its flat state—flexible, in the lighter gages—but as soon as it is ribbed, or formed in a "cell" of compound curvature, it becomes stronger and stiffer than can any other material of equal weight and volume.

Consider it this way: Isn't the "cellular" sheet steel object—be it a refrigerator or a hub cap or an automobile fender

—just about as efficient a combination of design and material as you can imagine?

Let sheet steel be your postwar material, and choose your sheets from Bethlehem's complete line. We make sheets for all purposes—deep-drawing, cold forming, stamping and welding; galvanized sheets; Beth-Cu-Loy (copper-bearing) for extra corrosion-resistance; and many others. Let us help you determine what kind of sheet can best serve your purpose. Get in touch with our nearest district office, or write to Bethlehem Steel Company, Bethlehem, Penna.



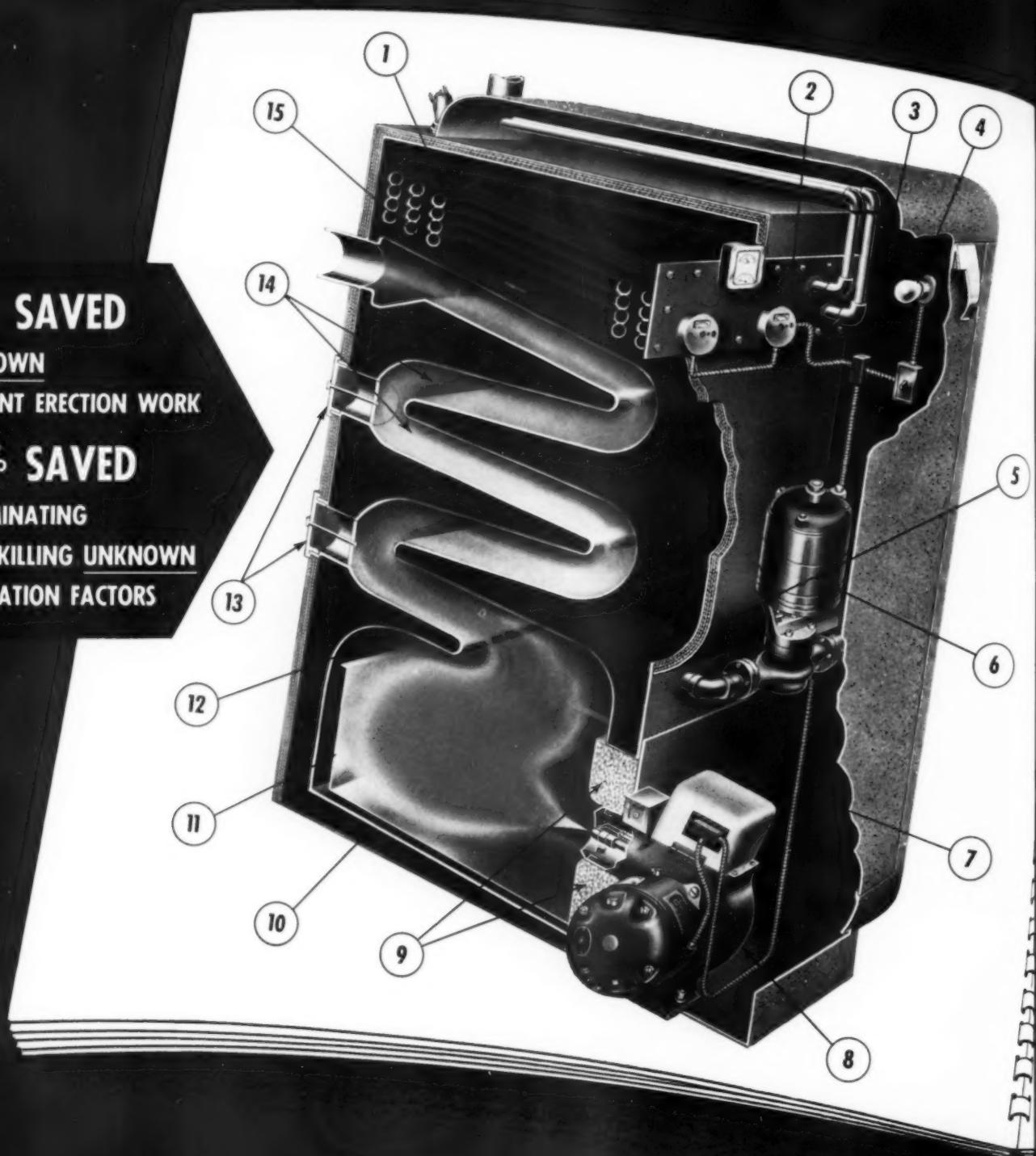
# THIS IS THE Inside Story OF THE

**90% SAVED**

ON KNOWN  
BASEMENT ERECTION WORK

**100% SAVED**

BY ELIMINATING  
PROFIT-KILLING UNKNOWN  
INSTALLATION FACTORS



**DISTRIBUTORS AND DEALERS** who are looking for a selling, profit-making line of modern heating equipment are invited to write Penn for complete details. Penn Dealers will be among the first to offer modern oil or gas-fired Units—Boilers, Forced Warm Air Units and Hydro-Air—completely packaged. You'll want to know more about the organization, operating and installa-

tion features made possible by complete factory packaging. Every detail is designed and proven to be of direct advantage, both to you as dealer and your customer as user. And the best is yet to come. . . . Permission to spot reconvert old units is ready to jump the gun just as soon as materials are available. You can get set now too. Write today and get the profit-story of Penn Packaged Heating.

2. Complete
3. Extended
4. Built-in
5. Extended
6. Bell & Gossett
7. Wiring
8. Tricians
9. Built-in
10. burner, factory
11. package
12. Custom
13. factory
14. removed

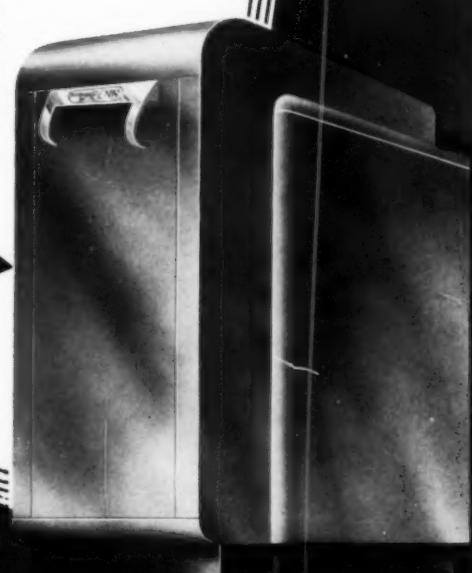
# PENN PACKAGED BOILER BURNER UNITS

The cut-away illustration of Penn's new gas or oil-fired boiler-burner shows exactly why we call these completely factory prefabricated units "Penn Packaged Heat." Shipped as 100% assemblies from the factory after careful balancing and fire-testing, this equipment is capacity-rated to fit any requirement. Selling is a matter of selecting the proper size and type; installation is on the same plane as setting up the modern radio, refrigerator or other packaged household appliance.

1. Instantaneous tankless hot water coils (200 to 300 gal. cap.) provide year round domestic hot water. Coil plates may be ordered for either tank or tankless coil. Low cost coils solve problem of "liming up"; replaceable for only \$6.00 to \$8.00.
2. Coilplate at front carries controls, gauges, etc. Allows quick and easy removal.
3. Extended side walls (patented) form vestibule to house burner, controls, wiring and switches, circulator, etc., all mounted, tested and shipped to you as a unit.
4. Built-in electric light makes inspection easy.
5. Extended boiler wall "belly" for extra water capacity provides quick recovery for perfect operation of tankless coil.
6. Bell & Gosset circulator optional as part of packaged unit for hot water boilers.
7. Wiring installed at factory by expert electricians; connects all controls with burner.
8. Built-in, specially designed gun type oil burner, designed and made at the Penn factory as an integral part of the heating package for peak efficiency.
9. Custom built, one-piece combined refractory and insulating brick front. Readily removed and cheaply replaced.
10. Wet boiler bottom utilizes heat usually wasted in ordinary designs.
11. Stainless steel fire box instantaneously transfers heat, cutting down running time and lowering stack temperature.
12. Extra baffle plate adds two fire travels in most critical heating surface in any unit.
13. Clean-out doors provide access to all flues; to clean, push dirt along passages into fire box and burn.
14. Backward and forward fire travel increases efficiency. Graduated flue travel utilizes gases fully, lowering stack temperature and increasing  $CO_2$ .
15. Sloping crown sheet causes flow to aquastat of water chilled by domestic coil, bringing unit into prompt response and directing water back over crown sheet for quick recovery without turbulence.

## MODERN DESIGN . . .

This is the eye-appealing new jacket design for Penn Boiler-Burner Units . . . adapted also for Penn Hydro-Aire (split system) Units and Forced Warm Air Units.



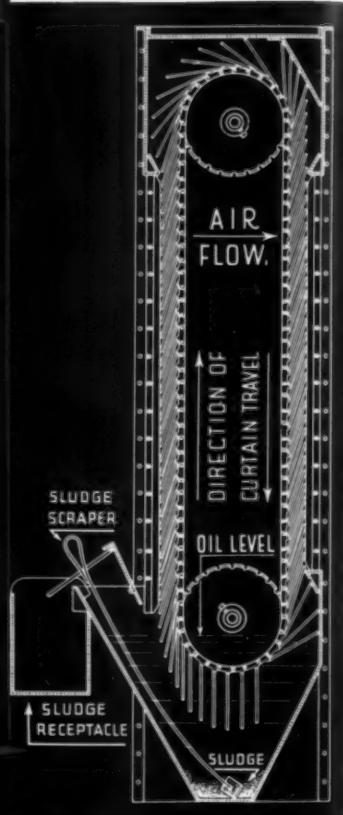
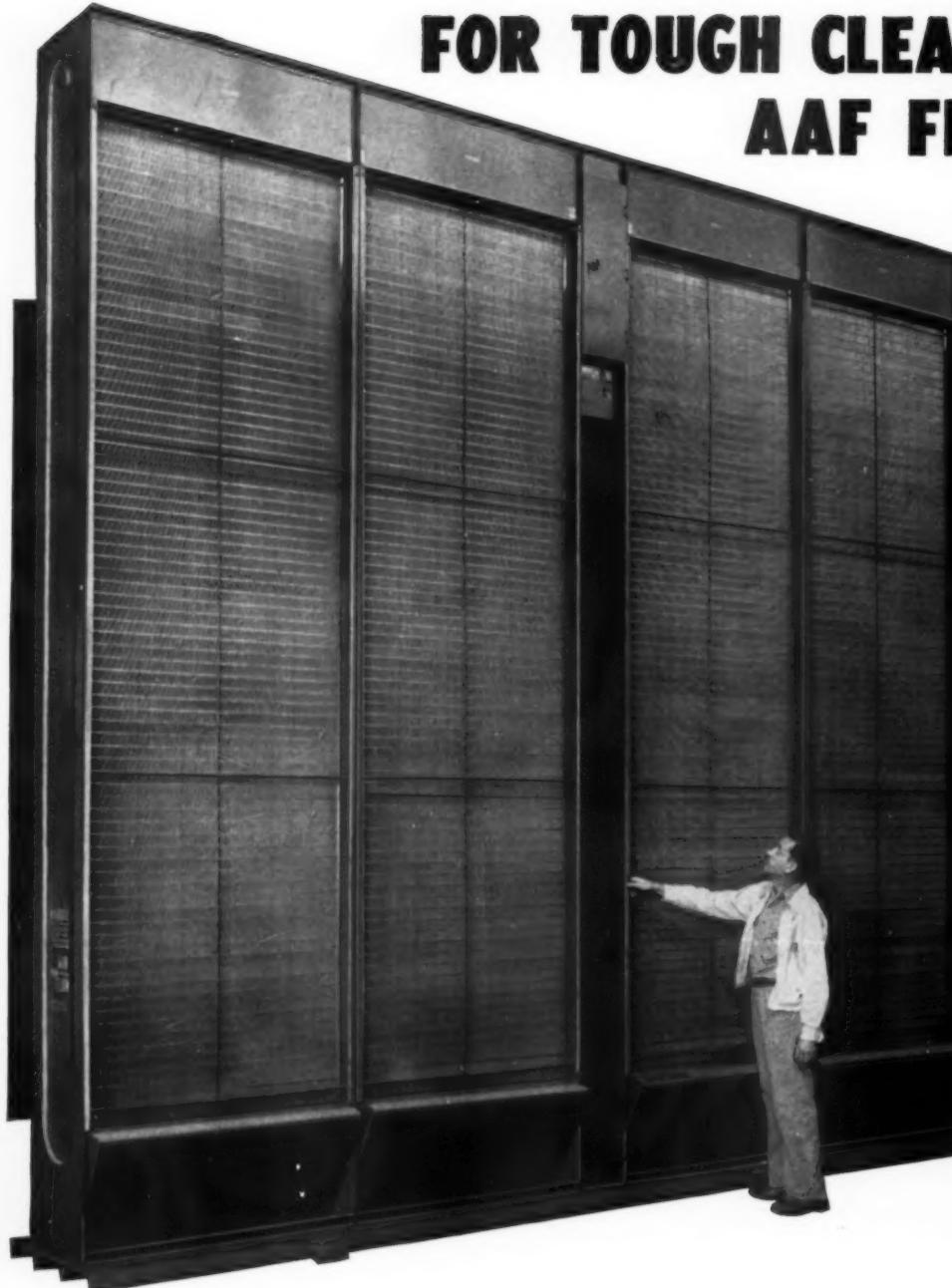
Packaged  
Heat by

**PENN**

PENN BOILER AND BURNER MFG. CO. INC.

LANCASTER, PENNSYLVANIA

# FOR TOUGH CLEANING JOBS AAF FILTERS GET THE CALL



## 20 huge Multi-Duty Self-Cleaning Filters like this one clean the air for the new G-E jet-propulsion engine plant

The 16-ft. Multi-Duty Filter shown above and 19 units almost as large (14 ft. 8 in. high) will filter the astounding total of 1,732,800 cfm of air for GE's new "plant of tomorrow" making jet-propulsion engines. High efficiency is obtained with Multi-Duty Filters in removing soot and dust particles. Thus they protect air conditioning equipment, plant machinery, precision pro-

duction and contaminable products and provide more healthful working conditions — conducive to greater efficiency of personnel. Continued improvement in the Multi-Duty Filter illustrates this company's policy of "good enough is not enough if better is required". This policy is the basis of AAF leadership in air cleaning and dust collecting. Ask for Multi-Duty Bulletin No. 241-A.

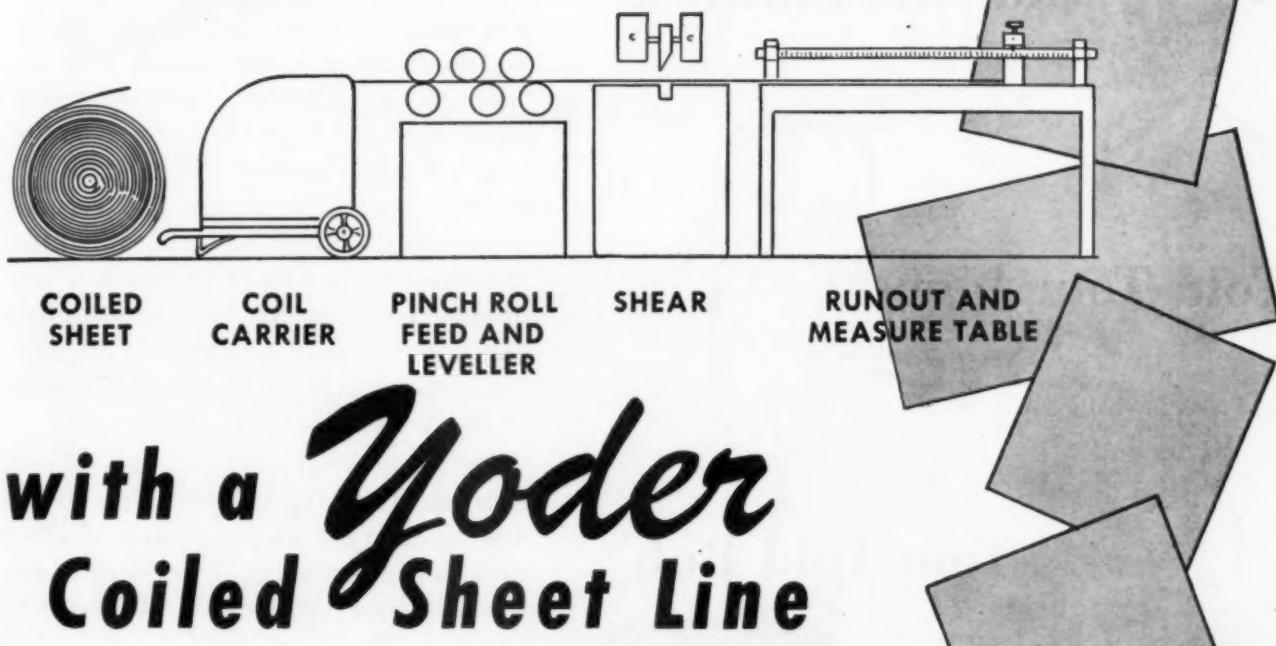
The above drawing explains the operation of the Multi-Duty. The air gets a double cleaning as it passes through the continuous filter curtain. The filter panels in the curtain overlap like shingles when in the air stream, but are separated and individually cleaned and re-oiled as they pass through the oil bath. Choice of three types of filter panels, depending on dust condition and operating requirements.

**AMERICAN AIR FILTER CO., INC.**  
355 Central Ave., Louisville 8, Ky.  
In Canada: Darling Bros., Ltd.  
Montreal, P. Q.

**AAF** **MULTI-DUTY**  
AUTOMATIC SELF-CLEANING AIR FILTER

# "TAILORED SHEETS"

## In Your Own Shop



## with a *Yoder* Coiled Sheet Line

SHEET metal jobbers and contractors who have "caught on" to the improved method of handling stock in coiled sheet form are showing keen interest in the special coiled sheet handling line developed by The Yoder Company, in a flow of inquiries following recent announcement of the equipment. One typical reaction . . .

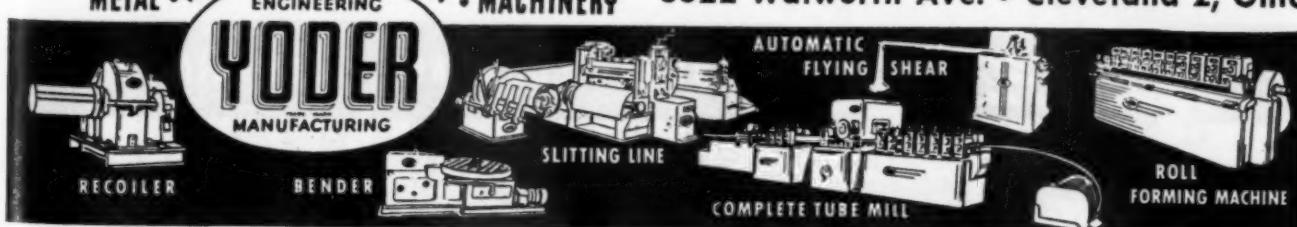
"For a long time I have wanted to be able to tailor stock in my own shop for any kind of a job without having to juggle ready-made sheets and come up with a lot of extra cutting and end-cut waste . . . played with the idea of making my own equipment to handle coils. It's really something to be able to get the equipment, properly designed by somebody who knows how this kind of machinery should be built . . . tell me how a Yoder set-up can be laid out in my shop . . . "

High quality cold rolled and coated sheet in coils can be conveniently stored in required widths and gauges, and any variety of lengths cut without waste as needed, on the YODER coiled sheet line, a schematic outline of which is shown above.

Let us tell you how this equipment can be fitted into YOUR shop to assure better profit on every foot of metal you handle, through increased efficiency.

If you will send us a sketch of the floor plan of your shop with location, size and type of present installations indicated, our engineers will prepare a simple design showing you how the Yoder Coiled Sheet Line should be fitted into an efficient, modern, time and cost saving layout . . . Address attention of Sheet Metal Engineer.

**THE YODER COMPANY**  
5522 Walworth Ave. • Cleveland 2, Ohio



## It Looks Like a Bumper Crop For RUDY Dealers'



**Old Bill Johnson**



**Told Tom Jones**



**Tom Told Bob**



**Bob Told**

*me*

Get ready for a big *ready-made* post war market — if you are a Rudy dealer. We don't mean home owners who are "going to buy a furnace," but those who know *right now* that they are "going to buy a Rudy Furnace"! These people haven't been idle during the furnace restriction — they have been asking their neighbors a lot of questions about quality, performance, fuel consumption and heat out-put, and have been thoroughly sold on Rudy by the enthusiasm of Rudy owners.

Better not wait another day to look into the Rudy franchise — these buyers are all set to get the jump on undecided prospects by making a bee-line to the nearest Rudy dealer. Write, wire or phone us now.

*After the War!*

**RUDY** WILL BE  
READY WITH AN  
EVEN FINER LINE  
**INCLUDING**

**FORCED AIR HEATING EQUIPMENT**  
Coal Fired • Gas Fired • Oil Fired

**GRAVITY HEATING EQUIPMENT**  
Coal Fired • Gas Fired • Oil Fired

**BLOWERS**      **OIL BURNERS**

**HUMIDIFIERS**      **STOKERS**

**WATER HEATERS**

**HEATING ACCESSORIES**



**Rudy**



**FURNACE COMPANY • DOWAGIAC, MICH.**

PUT THESE  
*Star Salesmen*  
 TO WORK!

(There's still time if you hurry)



**New Promotion Materials**, built on a time-tested and sales-proved formula, can help you sell DUST-STOP\* this spring . . . in substantial volume and at a profit. Colorful folders and timely mailing pieces, small newspaper mats and "spot" radio scripts, an attractive window streamer and new furnace-blower labels—all are available FREE. Ask your Dust-Stop Supplier about them! Or write *Owens-Corning Fiberglas Corp., 1930 Nicholas Building, Toledo 1, Ohio.* In Canada, *Fiberglas Canada Ltd., Oshawa, Ontario.*

**DUST-STOP** **AIR FILTERS**  
 —a FIBERGLAS product



## There's a Great Future in store for Round Oak Dealers!

ROUND OAK'S  
POST-WAR LINE WILL INCLUDE

★ KITCHEN APPLIANCES

Gas Ranges  
Electric Ranges  
Gas Combination Ranges  
Electric Combination Ranges  
Kitchen Heater Gas Ranges  
Coal and Wood Ranges  
New Kitchen Heaters

★ HEATING EQUIPMENT

Steel Furnaces  
Cast Iron Furnaces  
Gas, Oil, or Coal  
Air Conditioning Systems  
Space Heaters  
Electric Water Heaters  
Gas Water Heaters  
Oil Water Heaters  
Stokers  
Blower-Filter Units

*Famous*



# Round Oak

THE COMPLETE LINE



Round Oak is on the march—moving forward with the most complete, most advanced line of warm air heating equipment, water heaters, and stokers in its 74-year history—perfecting a sound, aggressive post-war program that promises a great sales-profit future for every enterprising Round Oak dealer. Some territories are still open, and one of them may be yours. It will pay you to investigate. Write, on your letterhead, to

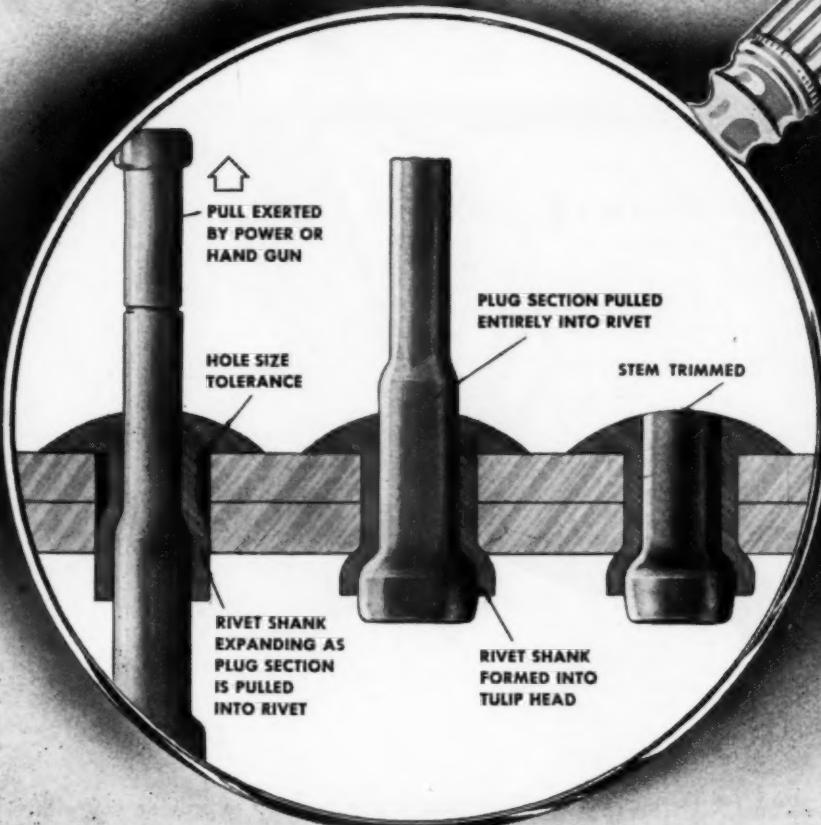
*Richard D. Nugent*

Richard D. Nugent, President  
ROUND OAK COMPANY • DOWAGIAC, MICHIGAN

KEEP FIGHTING—BUY WAR BONDS!

## FURNACES

# It's SHANK EXPANSION...



that makes **CHERRY RIVETING** so tight, so strong, so durable

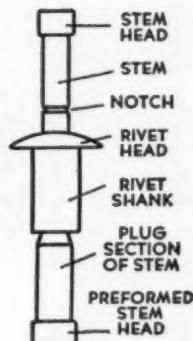
The high resistance to shear and fatigue typical of self-plugging Cherry Blind Rivets is due to positive mechanical expansion of the rivet shank.

This shank expansion occurs during application when the enlarged plug section of the stem is pulled into the rivet (drawings to right and above). The sides of the rivet are forced against the material being fastened, filling any irregularities in the drilled hole. The installed Cherry Rivet has shear and fatigue values comparable with those of a solid rivet—stays firm, even under excessive strain

and vibration. No special locking device is required.

Cherry Blind Rivets have generous tolerances in hole size and material thickness, as indicated in the drawings. Breaking the stem at the notch above the rivet head, rather than automatically breaking it at the nominal grip length, allows greater material thickness tolerance. The broken end is then trimmed flush with flat ground nippers.

Oversize shanks on special order.



*Send for your booklet  
and demonstration panel*

Please send me your new booklet. Also enclose the metal demonstration panel which shows actual stages in installation of Cherry Rivets.

Cherry Rivet Company, 231 Winston St., Los Angeles 13, Calif., Dept. A-200

CHERRY RIVETS. THEIR MANUFACTURE  
AND APPLICATION ARE COVERED  
BY U. S. PATENTS ISSUED AND PENDING

**Cherry Rivet**  
Company  
LOS ANGELES, CALIFORNIA

Name \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

Firm \_\_\_\_\_ Title \_\_\_\_\_

# Meet the *H*



**T**HE Herman Nelson Distributor is in a position to provide you with valuable assistance in the selection, application and installation of heating and ventilating products.

First, he can provide you with quality unit heaters, unit ventilators, propeller fans, centrifugal fans and unit blowers—all designed and constructed by The Herman Nelson Corporation, a recognized leader in the heating and ventilating industry for more than 35 years.

Second, the Herman Nelson Distributor has a trained organization, ready to provide practical as well as technical information in the selection of the exact type and size of equipment to provide most satisfactory results from your heating and ventilating jobs.

And third, he and his organization are always ready to assist you in the solution or simplification of any installation problems. Thoroughly familiar with Herman Nelson Products and their application, the Distributor will help you in such a way that your costs will be held to the minimum while your customers will obtain the results they have a right to expect from this quality heating and ventilating equipment.



Herman Nelson  
Direct Drive  
Propeller Fans

Herman Nelson  
Belt Drive  
Propeller Fans



Herman Nelson  
Horizontal Shaft Propeller-Fan Type Unit Heaters

Herman Nelson  
Type H  
Centrifugal Fans



Herman Nelson  
Vertical Shaft Propeller-Fan Type Unit Heaters

Herman Nelson  
Type HB  
Centrifugal Fans



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# Herman Nelson Distributor

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 Cincinnati, O.—Kenneth B. Little Co.  
 Cleveland, O.—H. W. Kaiser Company  
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 Denver, Colo.—Fox & Company  
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Duluth, Minn.—Williams-Swanson Co.  
 El Paso, Tex.—Boyd Engineering Co., Ltd.  
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Milwaukee, Wis.—C. W. Miller  
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Manufacturers of Quality Heating and Ventilating Products

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Herman Nelson  
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Herman Nelson  
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Unit Heaters



Herman Nelson  
De Luxe Unit Heaters



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Unit Ventilators



# E Q U I P M E N T

Today, Luxaire, with a plant that has been doubled in size and more than doubled in manufacturing equipment, is better equipped than ever to maintain and enhance a position of leadership in the warm air heating industry.

Before Schickelgruber started master-racing across Europe, Luxaire had attained an enviable position in the warm air heating industry. With an increase of more than 100% in manufacturing space and facilities, built to maintain an extensive program for the production of war materials, Luxaire, after V-day, will be ready to resume production of warm air furnaces and air conditioning units on a far greater scale.

The new, modern, heavy duty presses now used in our steel shell department, automatic welding machines and other new equipment, adaptable to the manufacture of heating equipment, constitute assurance of Luxaire's continued leadership in the production of warm air furnaces and air conditioning units. Luxaire dealers will progress and profit from the equipment which will manufacture Luxaire furnaces.

## *Luxaire*

THE C. A. OLSEN MANUFACTURING CO., ELYRIA, OHIO

THE PRE-WAR LINE OF LUXAIRE WARM AIR HEATING  
AND AIR CONDITIONING UNITS FOR COAL, GAS, OIL



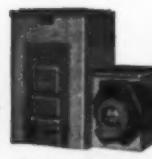
Series 600  
Coal Fired Steel  
Gravity Furnace



Series C  
Coal Fired Cast  
Gravity Furnace



Series 700  
Coal Fired Steel  
Gravity Furnace



Series AC-700  
Coal Fired Steel  
Air Conditioning  
Unit



Series A  
Gas Fired Steel  
Air Conditioning  
Unit



Series G  
Gas Fired Steel  
Gravity Unit



Series H  
Gas Fired Steel  
Utility Air Con-  
ditioning Unit



Series 800  
Oil Fired Steel  
Air Conditioning  
Unit



## Want to know why so many of the country's **BEST** stoker dealers have **FAIRBANKS-MORSE** franchises?



### A NAME MILLIONS OF STOKER PROSPECTS ALREADY ARE "SOLD ON"

If you are looking for the best and most profitable stoker opportunity for *now* and postwar, you naturally are going to weigh the selling value of the name behind the stoker. You'll agree that all over America the name Fairbanks-Morse is known to almost everybody. It's a respected name... a name stoker prospects are likely to accept as *prima facie* evidence of the worth of the product.



### A COMPLETE LINE... PLUS EXCLUSIVE FEATURES THAT CLINCH SALES

Many of the most successful stoker dealers in America value the fact that they have a model and size, in normal times, of Fairbanks-Morse Automatic Coal Burners for every need, domestic and commercial, hopper feed and bin feed. And they say that the exclusive, better features of AUTOMATIC COMBUSTION... AND IMPROVED FLEXIBLE RETORT... AND STOK-O-LITE in themselves clinch countless sales over all competition. You'll want to learn about these features, too.



### CO-OPERATION ALL THE WAY

Of course, you'll want to know how Fairbanks, Morse & Co. help you make sales and build business... about our continuous strong, interest-rousing advertising campaigns, our technical help, and selling helps, our promotional ideas.

So, why not act at once to see if there's a Fairbanks-Morse Automatic Coal Burner Franchise open in your territory... *write, wire or phone*. Now's the time to get set for postwar, and the vast demand that's waiting.

FAIRBANKS, MORSE & CO.,  
Stoker Division, Fairbanks-Morse  
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**Fairbanks-Morse**  
A name worth remembering  
America's Finest Automatic Coal Burners



# TOOL KIT

For Servicing  
"DL" FLOAT VALVES



That's right! A screwdriver is the only tool you need to disassemble and clean a "DL" Float Valve.

Simplicity of design and ease of servicing have made "DL" Float Valves an outstanding favorite in the oil heater field.

Many thousands of these reliable valves are rendering fine service on space heaters, water heaters, furnaces and ranges, etc., in homes throughout the nation, and in addition are serving our armed forces on tent heaters, truck heaters, ranges and cook stoves all over the world.

When you are selecting a line of oil heaters for your postwar marketing plans, you'll want something that an owner can take care of himself—something that will require a minimum of service.

That's why you should insist upon "DL" equipped oil heaters.

**DETROIT LUBRICATOR COMPANY**

General Offices: DETROIT 8, MICHIGAN

Canadian Representative—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

Division of **AMERICAN RADIATOR & Standard Sanitary CORPORATION**



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# VETERANS

★ ★ STILL IN SERVICE ★ ★

Only WEIR-MEYER distributors and dealers have this powerful sales appeal. Many of the famous WEIR riveted and welded steel furnaces have been in continuous operation for fifty years—and are still going strong!

Consider that against the average life of ordinary furnaces—seven and one-half years. Finer performance and low upkeep further strengthen the sales advantages enjoyed by WEIR-MEYER dealers.



When Grandpa and Grandma were "sparkin", WEIR-MEYER built heating equipment that meant Modern Heat in those days. Through the years, WEIR-MEYER has set industry standards.



## CONSTANT LEADERSHIP

Years of "know-how" assure WEIR-MEYER distributors and dealers of equipment that will capture post-war markets.

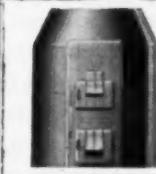
If you want a complete line of Warm Air heating and Air-Conditioning equipment that gives the consumer greatest value, that gives you legitimate profit and enthusiastic customers, investigate WEIR-MEYER.

You may be in territory not already served by a WEIR-MEYER dealer. Write today. It is the first step toward postwar leadership in your town.

### THE MEYER FURNACE CO.

Weir and Meyer Furnaces—Air Conditioners  
for COAL—GAS—OIL Peoria 2, Ill., U.S.A.

For all Fuels **COAL—GAS—OIL**



WEIR U Series STEEL FURNACE. Famous WEIR riveted and welded construction. Exclusive, entirely new features.



MEYER Gas-fired AIR CONDITIONER. Built for efficiency and durability. Easy to install. Finer performance. Greater convenience.



MEYER Oil-fired AIR CONDITIONER. Gives the user of oil a new conception of cleanliness, efficiency, economy of operation.

**WEIR-MEYER** MEANS *Modern Heat*



- Asphalt Shingles and Roll Roofing • Felts • Paper • Nails
- Cements • Roofers' Tools
- Ladders and Accessories

A DEPENDABLE SOURCE OF  
SUPPLY FOR 86 YEARS

## Osborn Asphalt Roofing

helps you increase the volume of your roofing business . . .

Many aggressive sheet metal men are proving daily that there's plenty of profitable work to be had applying asphalt roofing. • OSBORN helps you make the most of this opportunity, by supplying the materials, supplies, and equipment you need — Asphalt Shingles, Roll Roofing, Building Papers, Nails, Cements, Coatings, and Paint. The four OSBORN warehouses carry adequate stocks for prompt deliveries.

• The Spring rush for roofing improvements promises to be heavier than usual this year — due to increased necessity for repairs and greater ability to pay for them. Be equipped to do this profitable work — and with good-looking results that please owners. Order your roofing requirements from your OSBORN salesman *now*, while sufficient supplies are available . . . or write us direct.

THE J. M. & L. A.  
**OSBORN CO.**  
CLEVELAND 14, OHIO  
DETROIT 2 • BUFFALO 11 • CINCINNATI 25  
Subsidiary of Milcor Steel Company

# Announcing MAYN AIR DAMPERS

U. S. PATENT NO. 2,284,912

**NOW Manufactured by  
THE HENRY FURNACE COMPANY**



Mayn Air Damper in  
stackhead eliminates  
dampers in basement  
ducts.

## *Advantages*

### **that Appeal to All Furnace Dealers**

1. Is installed in stackhead; takes the place of dampers installed in basement ducts.
2. Lower in cost than old style dampers.
3. Positive in control.
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5. Tamper proof—special tool locks damper.
6. Rattle proof—noiseless.
7. Quick and easy to install.
8. One man balances system.
9. Saves you money in three ways—cost of damper—cost of installing—cost of balancing.

• The Henry Furnace Company, Medina, Ohio, manufacturers of Moncrief Warm Air Furnaces, Air Conditioning Units, and Moncrief Furnace Pipe and Fittings, announce that they have acquired the exclusive manufacturing and selling rights to the Mayn Air Damper.

The Mayn Air Damper was developed by J. Earle Maynard, well known warm air heating and air conditioning engineer, to provide a much needed dampering device for all air conditioning systems.

Introduced in 1940, thousands of Mayn Air Dampers have been installed in air conditioning systems in all parts of the country.

### **★ IMMEDIATE SHIPMENTS**

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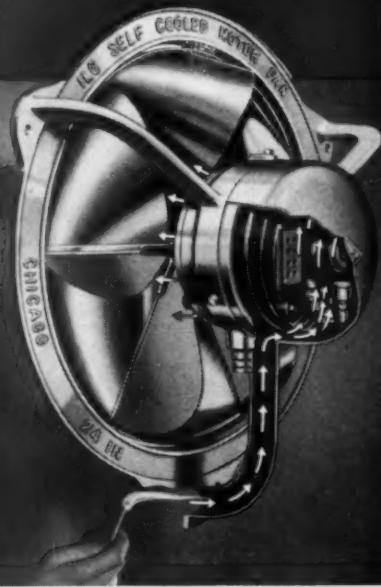
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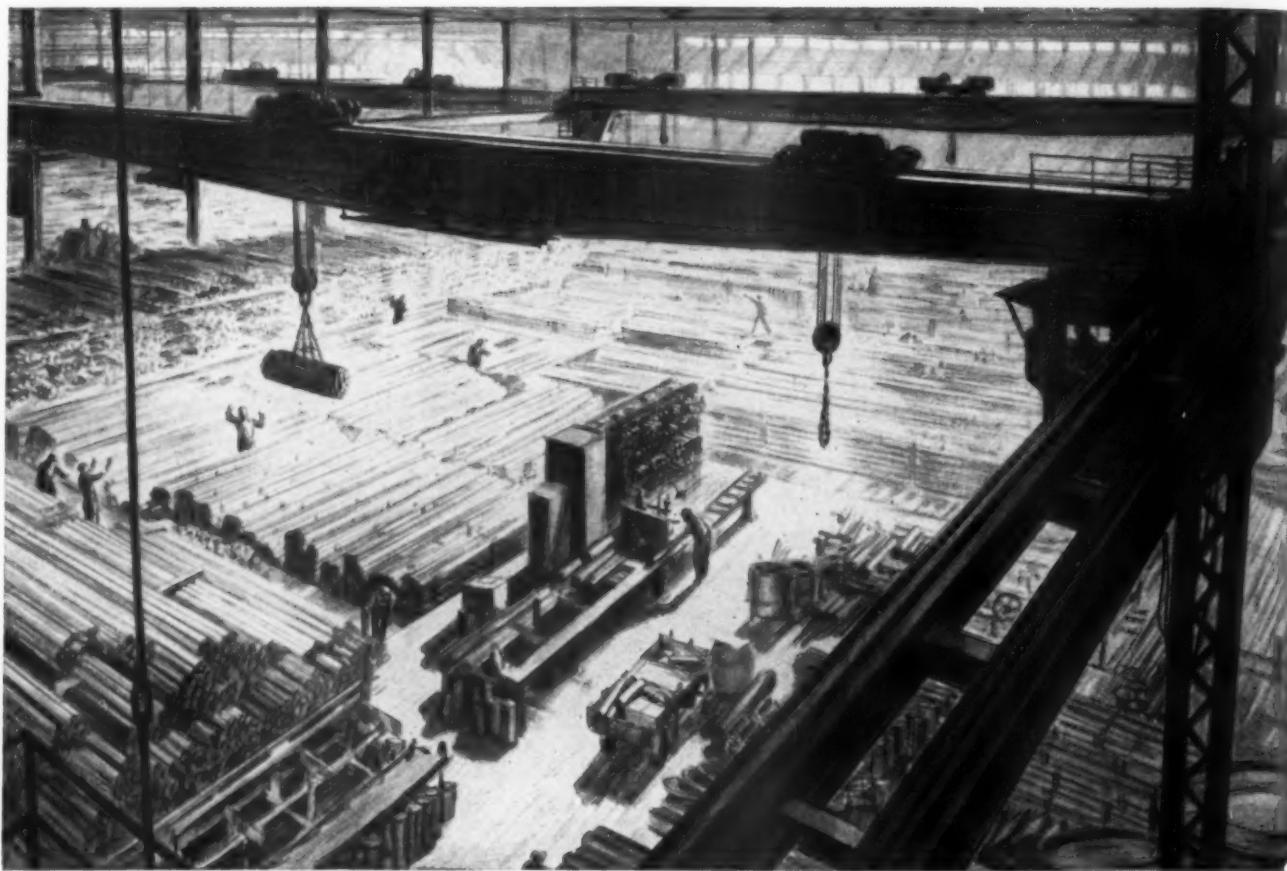


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## Estimated 1945 Construction

**P**RELIMINARY estimates of new construction volume in the United States in 1945, based on the assumption that war on both fronts will continue throughout the year, indicate an activity volume of \$3,250,000,000, says WPB. The volume forecast for 1945 is the lowest volume of construction since 1935.

This estimated activity is 82 per cent of the 1944 volume and 24 per cent of the peak 1942 performance. Almost half the 1945 volume will be accounted for by privately-financed work as contrasted to 40 per cent in 1944 and 20 per cent in 1942 and 1943, WPB said.

Construction activity generated by purely military requirements is expected to be about a third less in 1945 than in 1944, both for industrial and non-industrial work. Activity in the construction categories for essential civilian and indirect war purposes is expected to continue in 1945 at about the 1944 rate, with an estimated decline in new housing volume being offset by increased non-military work in the industrial field and other non-residential categories.

Military construction (troop housing, airfields, storage facilities, etc.) within the United States is expected to decline from \$730,000,000 to \$480,000,000 and Government-financed plant construction from \$745,000,000 to \$470,000,000. Privately-financed factory construction in 1945 is estimated at \$250,000,000, a 7 per cent increase over the 1944 level. Overall housing volume is expected to decline from \$690,000,000 to \$500,000,000, or 28 per cent under the 1944 volume, with the bulk of the decrease occurring in Government-financed work. All other types of non-industrial construction—comprising highways, community buildings, sewer and water, conservation and development, utilities, farm, and other non-residential work—are expected to total \$1,550,000,000, a slight increase over the 1944 activity for these types, the WPB estimate reveals.

For the sheet metal industry, including ventilating, air conditioning, fume removal and dust collecting specialists, this forecast of 1945 construction volume seemingly indicates some slight increase in privately financed factory or industrial building. With manpower problems still acute, this volume probably will require all of our facilities. Some additional facilities may be forthcoming from the esti-

mated decrease in military construction and government financed war plants—the gain here may be just about sufficient for the increase in privately financed plant construction.

If overall housing construction declines from 690 millions to 500 millions, a drop of 28 per cent from 1944 volume, it may be that warm air heating contractors will find some manpower and facilities to apply against the growing backlog of civilian service work. Throughout the last twelve months—so readers report—the volume of heating service (repair, maintenance, service) has increased steadily. At the beginning of this heating season many contractors faced impossible demands for service and it was not unusual for a contractor to have two and three months' work ahead and no way to take care of it.

Probably, throughout the winter this backlog has been whittled down, but with too few furnaces available for replacement and with more and more heating plants reaching the stage where replacement is warranted, it is likely that heating contractors face in the coming months a tremendous need to repair.

Whether justified or not, all reports coming from Washington claim there will be less material available during the first half of 1945 for furnaces than was allocated in 1944. Should this prove to be a correct forecast, then most furnace dealers will find new furnaces scarcer this year than last.

As American Artisan suggested in 1944, every warm air dealer should replace only where necessary and try to repair and patch wherever possible if the industry is to stretch the supply of furnaces anticipated.

It is not possible now to forecast how many furnaces we may expect in the first half of 1945—some indication may be available at the end of the first quarter. Lacking any definite figures it may be advisable for the time being to take the figures showing number of furnaces by counties forecast in American Artisan in the first part of 1944 for 1944 and use this number for 1945—until something more definite is available.

This whole situation is an "if and and" proposition—nothing a dealer can put his teeth into—only if manufacturers, jobbers and dealers make a real effort to stretch a dwindling supply can we keep home owners warm and comfortable in 1945.

# Build Your Postwar "Reserves" Now

By Arthur Roberts

WISE businessmen are postwar-planning. Leaders in this industry advocate it. Some dealers and contractors are thinking about postwar possibilities, a few have made rather nebulous plans, but, if our experience is any criterion, few have adopted a fiscal program with which to finance their plans. One is useless without the other. Postwar plans for promoting the sale of heating systems, modernization and expansion and war losses should be underwritten now, not when the war is over. What steps are you taking to be ready when the great day comes?

Few dealers and contractors have a clear understanding of "reserves," so we offer this simple explanation. Ordinarily, reserves are used to take care of depreciation on buildings, fixtures, trucks, showroom and installation equipment and bad debts. The accounting routine is to charge current profit with the depreciation expense and credit a reserve, so that the sum so set aside will equal the cost of the depreciable assets at write-off. The "postwar reserve" is built in like manner, charging current profit or other available source of income and crediting the postwar reserve.

## Set Up These Reserves

Members of this industry should fall in line now with other progressive businessmen who are setting up postwar reserves to cover:

1. *Inventory Losses.* In the event of price declines at war's end and the disposal of unadaptable, obsolete or excessive war materials, the conversion and salvage of obsolete or otherwise useless non-war materials, frozen during the war. Those on war work should consider a reserve for inventory losses that may occur at termination of war contracts.

2. *Postwar Promotional Expense.* It will take money to advertise and sell the heavy postwar volume certain to materialize when they sound the last "all-clear." Members of this industry must utilize better publicity and salesmanship to get more of the building dollar than in prewar years, to sell better heating systems to the home owner and speculative builder, to educate consumers to buy heating comfort in preference to riding comfort—and this can't be done right without appropriating a certain amount of expense to such promotional activities. Waiting until the postwar period to budget this expense and arrange to procure funds is poor business. Do it now. Some businessmen who have discontinued advertising in this seller's market are setting aside their prewar advertising appropriation in a postwar reserve.

3. *Reconversion Costs.* What it costs to reorganize and get going on peacetime production again. Incidentally, reconversion during the postwar period may cost more than the expense of conversion to war production.

4. *Forced Obsolescence.* To cover equipment not written off the books, but old before its time because improved equipment and products born of the war are marketed at war's end.

5. *Accelerated Depreciation.* Equipment being operated at an excessive rate. If rates were set before the production over-load, the write-off should be increased accordingly. But, in many cases, this excess isn't computable until after the war. A postwar reserve is the adjusting factor.

6. *Depreciated Plant.* A decrease in plant value due to the reduction in capacity resulting from a drop in volume after the war.

7. *Termination Wages.* Separation allowances or bonuses paid to employees who are discharged at the termination of the war.

8. *Special Equipment.* Forced sales of equipment bought for war production that may not be of use after the war.

9. *Postponed Repairs.* Repairs and maintenance deferred because of all-out production and inability to maintain equipment satisfactorily because of man power and materials shortages. Deferred repairs are always more costly than repairs made immediately. Such expenses should be charged up now, not to the postwar period, because sound accounting demands that current revenue be charged with all reasonably determinable costs and losses fairly applicable thereto. Wartime losses and contingencies should be charged to the war period.

10. *War Expansion.* The amortization of war expansion not entirely absorbed at war's end.

11. *Bad Debts.* Losses on accounts receivable. Credit is based largely on income, hence many employed at war work are being given credit today. If the income of these debtors is cut or stopped at war's end, the creditors may suffer heavy losses or experience higher collection expense. If directly or indirectly, your wares are being sold to consumers on credit, your losses from this source may be higher after the war and it is wise to "cushion" this hazard now with a postwar reserve.

12. *Post-war Training.* To train "green" help in anticipation of heavy post-war volume. What the post-war manpower problem will be in this industry we cannot say now, but we do know that other fields requiring mechanics and servicemen are setting up reserves for this contingency now in case there is a shortage of labor due to unprecedeted volume or loss of manpower because of the war.

13. *Full Employment.* Some think that American businessmen cannot provide full employment, that the government must step in and assume some measure of control that will be detrimental to free enterprise. Government control and management will mean more taxes.

14. *New Equipment.* Equipment written off since

Pearl Harbor. Normally, at write-off, trucks, fixtures, tools and other depreciable assets are replaced, so that another depreciation charge appears automatically in costs. Today, many businessmen are still using assets written off since the war because they cannot get replacements and no depreciation charge appears in costs, thereby increasing profits, which may be earmarked for postwar use to provide funds for new equipment after the war.

15. *Modernization.* Showroom modernization and expansion. To get more of the consumer's dollar for heating equipment necessitates better merchandising. Members of this industry cannot get best results from shops or lofts. They will need showrooms, where their wares can be shown to best advantage\* and other lines, such as electrical appliances may be sold, as some have suggested. Those already possessing showrooms must modernize.

16. *Renegotiation.* The possibility of loss due to renegotiation. Such a loss should be charged to the war period by means of a reserve set up now and we believe, in view of the many uncertainties attending renegotiations, that this is the most practicable means of hedging against loss.

All contractors and dealers may not have use for all these postwar reserves, but a certain number of them should be found useful.

#### **Where to Get the Money**

Where are businessmen getting funds to finance their postwar plans? Out of 377 businessmen queried about postwar reserves, 255 charged current profit, 21 charged net worth, 20 transferred credits from other reserves, and 81 reported no experience, so you see the practice recommended here is prevalent and worth consideration by all members of this industry. Some concerns are allotting the 10 percent credit on excess profits tax to postwar reserves, others are contacting outside sources to line up financial assistance for postwar activities. Even a small businessman should take such a step now. It is poor business policy to wait until you need funds to attempt to get them. Talk to your banker now about your postwar plans. Show him a "crash" balance sheet with your postwar reserve set-up and your chances of getting favorable consideration will be enhanced because it indicates conservatism. A "crash" balance sheet is one that anticipates the financial condition of a business at war's end. Many businessmen are preparing them now. Profits earned during the war period may carry a lot of water that

must be drained off when the blitzes are over. Some businessmen may crow over the fact that they are earning more today than in prewar days, taxes considered, but this may be due to topflight sales volume at a low overhead-to-sales-dollar ratio. If you are in that boat, reserves for postwar operation will correct that visionary defect by bringing current profit into the normal zone.

#### **Keep Your Plan Legal**

Some contractors and dealers carry no reserves on their books at all. Others carry inadequate reserves. Others have reserves adequate in normal times, but below par today, because our war economy has distorted normal business practices. The first step is to determine where you stand on reserves NOW, then proceed from there. The prewar purpose of reserves was to record depreciation in order to justify the income tax deduction for this expense and to see that costs included adequate charges for depreciation. From now until stability returns, reserves must cover a wider field.

You can't deduct for postwar reserves on your income tax return, but Congress is being pressed to permit such allowances. If so, the businessman who has established postwar reserves should be in a preferred position to get the desired credit. The Treasury Department usually demands proof of the reasonableness of a desired allowance so the fact that the taxpayer has planned and recorded the figures should help him get the deduction.

Your plan should include an estimate of the outlay for deferred war costs, modernization, expansion and promotion and also consider the postwar refund of excess profits tax, if due your company. You may "guesstimate" wrong but some sort of a plan is better than wondering what it's all about when the Axis cries quits.

Circumstances alter cases. Every contractor or dealer must plan and finance his postwar program differently. We do not attempt to give specific advice in this article, merely to set you straight on reserve accounting so that you include it in your postwar business curriculum and handle it properly at a time when it is so vitally important. If postwar reserves help swell my liquid funds, why not freeze this portion of my cash, you may ask? Okeh. Open an account for the desired sum, call it "Fund for postwar betterment," set aside a percentage of sales or cash from other sources monthly and invest this money in war bonds until needed.

### **Prices of Sections of "Practical Warm Air Heating"**

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Arnold Kruckman's

## Washington Letter



### Many Problems Face Employer and Veteran

THE charge that any group insurance underwriters, either State-operated or mutual insurance companies, object to employment of disabled or handicapped veterans, or that any such organizations have denied insurance coverage when handicapped veterans are employed because the handicapped veterans are a hazard in shop operations, is flatly denied; and the insurance people have challenged officers of the *Selective Service System* and of WMC to produce any specific instance, with chapter and verse. The insurance people have told Vernon Banta, in charge of Veterans' affairs at the War Manpower Commission, that they will make it their collective business from a national over-all insurance supervision standpoint, to investigate any authenticated case, and that they will take the necessary steps to correct any proven instance, and, apparently they propose to do whatever is the equivalent in insurance circles to discipline any offending insurance institution.

#### **Prejudice Is Flatly Denied**

The point is that the insurance people apparently do not plan in any way to deny the employer of handicapped or disabled veterans, now or in the future, the benefits of group insurance. The reports from various parts of the country that group insurance units have served notice they would refuse to maintain the coverage of plants in which the handicapped veterans are employed apparently have hit hard the leaders of the insurance institutions of the country, and the leaders have more than vigorously protested to the Government.

The heads of the American Association of Mutual Casualty Companies, and the Association of Insurance Executives, as well as the heads of institutions such as the Metropolitan Life Insurance Company, have recently visited the Capital to discuss the reports with Mr. Banta, and others. Neither Mr. Banta, nor the officers of the Selective Service System, remotely question the good faith of the leaders from whom they have heard.

The Government people have not yet investigated the information that has drifted into Washington. Apparently it has not been of sufficient substance to lead them to form final conclusions. The Selective Service System people go so far as to say that whatever fact there may be behind the reports appear to be few and rare, meaning there might be some isolated instances. Mr. Banta, a specialist widely known in so-called selective placement of handicapped workers, definitely appeals to any one who has specific information in any

particular case to send it to him. He may be addressed: *Vernon Banta, War Manpower Commission, Room 614, 1778 Pennsylvania Avenue, Washington, D. C.* His telephone is Executive 4660, Extension 2723.

#### **40,000 Discharges Per Month**

It is estimated by Selective Service approximately 1,500,000 soldiers of this war have been discharged and are now veterans. The past two months the discharge of soldiers has dropped sharply. In the months gone by the number has ranged from 30,000 to 90,000 per month. The expectation is that the average will range between 40,000 and 50,000 per month in the period ahead. Obviously the curve will rise as the tempo of the war increases. Figures about the disposition of the discharged soldiers are yet uncertain. Selective Service has recently made a survey of two per cent of the veterans in order to determine where they are, what they are doing, what they plan to do, and to get an over-all sampling of their circumstances and conditions.

#### **Selective Service Is Veterans "Union"**

Bear in mind, Selective Service is the agency designated by Congress to take care of the immediate affairs of the veterans when they are discharged. It is their business agent, under the law. And so long as Maj.-Gen. Lewis B. Hershey is the head of the SSS, the veteran will receive not only entirely sympathetic attention, but his interest will be defended actively and vigorously as well as intelligently. Gen. Hershey is a Hoosier. He is a typical Hoosier, politics and all. He is over six feet tall, has a good, strong, friendly face, and is as easy as an old shoe in his relations with the people he likes. He is a good soldier, has an active and witty mind, is full of solid character virtues, and makes his best appearance when the going gets really tough. He exasperates the book-governed soldiers because his decisions are realistic and practical. The people around him have a tremendous affection for him, which makes him the kind of soldier who might do what Sheridan did when he turned the routed army in the Shenandoah Valley. Hershey is the kind of middle westerner who is completely at home at one of those sessions around the stove in the store at the cross-roads. Fundamentally he is a farmer. There is nothing in his social relations or his way of life that would lead you to know it, but he is a member of that very wealthy family which gave its name to Hershey, Pennsylvania, where they make the Hershey chocolate products. He occasionally goes over to Hershey for an

opportunity to get away from this madhouse of Washington and to get his droll slant at life and politics from a peaceful distance. It is good business for the man in industry to have some acquaintance with the essence of Gen. Hershey, because the SSS will have far more to do with the economic program of this country, as the veterans begin to come back in real numbers, than most business people realize. There are many indications that, under the law, the SSS will largely supersede the unions, so far as the veteran is concerned.

### 50% of Vets "Disabled"

The results of that SSS veteran survey will not be available until well into April. It should be interesting. The general assumption now is that well over half the discharged soldiers are classified as disabled. Apparently between 800,000 and 900,000 come in the disability category. It is roughly estimated that approximately 600,000 suffer from what hitherto has been put down as psycho-neuroses. A psycho-neurotic is a veteran who is no longer useful for military service, but in the vast majority of cases will recover entirely if his good friends and his loving relatives don't prevent the recovery by treating him as something abnormal. In the first world war we called it shell shock. In the beginning of this war we called it battle fatigue or operational fatigue. It is a known fact that over 38 per cent of the psycho-neurotic battle casualties go back to duty within two days after receiving psychiatric treatment at the front, and over 80 per cent whose troubles were serious enough to be hospitalized have been completely restored to health and have returned to full Army duty. They do not call them psycho-neurotics on the Army-Navy certificates any longer. The term had implications that misled the folks back home, and also was tangled up with the official excuse of draft boards for many deferments in low classifications. There are many men presently exempted on the grounds of psycho-neurosis who are working overtime at many well-paid jobs. The Army-Navy now describes the combat exhausted veteran as "Not suited for military service."

The 25 per cent or less of the total number of 800,000 to 900,000 disabled veterans have physical disabilities as the result of wounds received in battle. These men, approximately 200,000 now in this country, have lost a leg, or an arm, or an eye, or have wounds or physical impairments that are not obvious, but have actually suffered physical disabilities. The men who have seriously suffered from combat exhaustion usually are still unsure, uncertain, and often are mistakenly regarded as permanently unstable.

### Today's Veterans Not Typical

The people here in Government earnestly impress upon us that this large majority whom many employers now encounter are not typical of the veterans who will come back when the German war is over. These battle fatigued veterans are the lads about whom you have heard as drifting from one job to another, in these days when jobs are so vastly more numerous than workers. It is known that some of them will work at a place for six or eight weeks and then move on. Occasionally the process is exasperating to some employers, but it should be remembered the condition is an inevitable effect of their condition, and that the circumstances are almost the same as that which was common with many veterans after the last war. Many of the veterans of the first world war were irrepressibly restless even though they were not shell shocked.

The condition quickly wore off.

The 25 per cent who suffered actual physical disabilities as a rule have thoroughly rested in hospitals and are reasonably oriented in their return to civilian life. Mr. Banta says it is difficult at this time to classify the trades or occupations they came from and to which they may go. He says they came out of the great old American squirrel cage and will find their places in all the vocations of pre-war life. All people who deal with the veteran tell you the veteran now particularly seeks a job somewhere in the war effort. He wants to do something to be "in there pitching" for his buddies who are still on the battle front. Naturally they seek security, but at this time they seem overwhelmingly possessed by the desire to do something to get through with the war as fast as possible. It seems to be the judgment of those who really know, that the physically handicapped worker is just as efficient, probably even more efficient, than the normal worker. Under conditions of selective placement it has been found he produces more quantitatively and qualitatively, than the non-veteran. Reliable surveys have revealed that the accident rate among the physically handicapped veterans is 14 per cent less than among their civilian fellow workers. They are far more cautious. The records show that they are absent and quit their jobs 7 per cent less frequently than the ordinary run of employees.

### Employers Must Help Veteran

It is anticipated the veterans now at work in war plants and other jobs will supply much useful and encouraging experience and data as a yardstick or in the employment of the veterans who will come along later. Mr. Banta urges that employers can help the veteran and help themselves by placing the veteran where it is indicated he may be most useful, by making a job analysis listing the physical requirements of the work, the inherent hazards, hours and shift schedules, how much supervision may be required, what special knowledge is required, and experience.

Next, the disabled veteran should be examined by the physician to determine the physical limitations, not the physical abilities. He points out that the minor disabilities often cause most of the troubles, and the veteran who is placed where these slighter defects will cause no trouble adjusts himself and does a top job. It is known that veterans who are regularly checked up and receive the indicated minor corrective treatment, quickly show an increase in output. It also is suggested that a little patience with his idiosyncrasies in the beginning, and transfers to other tasks if the action seems indicated, and an effort to treat him just as if he were reasonably normal, without reminding him of his disability, helps the man and is a good investment for increased efficiency.

Above all it is urged to accept the handicapped veteran as an equal among the run of workers. The mistaken kindness of segregating the handicapped in groups, to do work presumably easier for the handicapped, retards his assimilation and his adjustment. The more swiftly he thinks of himself as a normal person, the better it will be for his job as well as for himself.

All these principles are earnestly recommended and approved by the American Medical Association. If you happen to be an employer of five men or 500 men, Mr. Banta will eagerly help you to learn how to initiate these placement proceedings. He has already put them

(Continued on Page 135)

# Profits During Winter Months

By Charles R. Bennett\*

**T**HE heating business is seasonal. We are busy during the late Spring, Summer and Fall. As a rule, we pile up business losses during the Winter and Spring months of December, January, February, March, April and May; and sometimes there is a loss during June.

If a heating dealer could close up his business on December 1st and open up his business in Australia the same day, he could, by running his heating business six months in the United States and six months in Australia, have a year-round profitable business. This, as you know, is because the seasons are opposite in Australia to those in our country. Of course, he would have to take care of service with a service organization shifted back and forth between countries during the winter season in each country. This might be a good arrangement for a heating equipment manufacturer but would be almost impossible for a heating dealer.

Let us see, therefore, how a heating dealer can make his business profitable in the United States throughout the year.

Since the heating business is seasonal, let us see how seasonal it is and what can be done about it. Retail sales over a period of the past 20 years in 1,800 dealer businesses under observation have been approximately as follows:

|           | Per cent<br>of yearly<br>business |
|-----------|-----------------------------------|
| January   | 2.5                               |
| February  | 3.0                               |
| March     | 4.5                               |
| April     | 7.0                               |
| May       | 8.0                               |
| June      | 9.0                               |
| July      | 11.0                              |
| August    | 13.0                              |
| September | 14.0                              |
| October   | 14.0                              |
| November  | 8.0                               |
| December  | 6.0                               |
|           | 100.0                             |

If we have a cold Spring, business during April, May and June is less than the percentages shown above. When such a cold Spring comes along, the loss of business is of such proportions that it is almost impossible to turn such a loss into a profit during the last six months of the year. I have seen many heating businesses turn such a loss into a profit by December 1st, only to show up in the red

\*Editor's Note—C. R. Bennett has been with Chicago WPB for the past two years but for 10 years was Assistant Sales Manager for Holland Furnace Co.; for 5 years Vice-president and Sales Manager for the Landwehr Heating Corp., Philadelphia; for 3 years a branch store manager with Kalamazoo Stove and Furnace Co.

by the end of the year. With a good gross profit it can be done, but it is an uphill job of day and night work.

## Products to Sell in Winter

I have put on hundreds of sales campaigns to sell heating plants in the winter months in old houses, and while it may be pretty arbitrary to say it can't be done in enough volume to show a profit, it so far has been a total failure as far as I am concerned; and this is the same experience of thousands of other heating dealers. Because we couldn't straighten out the sales curve with just heating sales, we looked around for services and products which sold best during winter and spring months. It was found that heat regulators could be sold during the winter months because the heat from the heating plant did not have to be interrupted. Salesmen, on a commission basis, were hired and paid a commission of 20 per cent on the installed retail prices of \$60.00 to \$100.00. But, even with the sale the first year of 150 heat regulators plus service and a few break-down furnace sales, we did not show profit figures during winter and spring months, although adding heat regulators helped.

The second year, on November 1st, we started calling on our thousands of cleaning, repair, accessory and furnace customers, as well as a cold canvass on other home owners, and showed them the comfort, convenience and cleanliness of winter air conditioning, oil burners, stokers and heat regulators. We sold a few oil burners, stokers and air conditioning blowers, as well as 200 heat regulators, and some repair work and a few break-down furnace sales, but the winter months still did not show a profit. Our sales curve was, however, being straightened out; and our financial showing during the winter months was better. We also found that salesmen and installers were staying with us throughout the year. This was a revelation, as it meant that the men could make a living the year around if the sales curve could be further straightened out.

## Packaged Goods From a Downtown Store

The following year we moved the store to a shopping center of the town and checked with the newspapers on the trading areas in the town. One newspaper had trading areas plotted on a map showing the spots where the most people walked by the stores. The number of people walking by is definitely reflected in sales of appliances. In the heating business, it doesn't make very much difference where a store is located, the telephone being the important avenue of business; but by moving to a good trading area where a great number of people walked by, we felt that we could sell package merchandise during the winter and spring months, so we added a line of cooking and heating stoves (gas, oil and coal). Since that winter, we went after heating business the year

(Continued on Page 146)

# S.M.C.N.A. Apprenticeship Committee \* Reports -

## A National Apprenticeship Program For the Sheet Metal Industry

WHILE by custom and tradition apprentice training is associated with youth, it is actually a planned form of training having as the objective the development of all-around trade knowledge and skills. A successful apprenticeship plan in any trade or locality must have the support of both employers and journeymen engaged in the trade. In the Sheet Metal Industry of any state a joint committee of contractors and journeymen must be formed. On it is represented the.....State or.....Local Sheet Metal Contractors Association, and the.....State Council of Sheet Metal Workers.

### Local Joint Trade Committees

Since the actual employment and training of apprentices takes place in local communities, it is apparent that all of the work of national and state apprenticeship groups is directed toward securing interest and action on the part of local employers and employees.

In those trades where both employers and employees maintain local organizations, the objective is to secure the appointment of a local joint apprenticeship committee for the particular trade. This committee is given the responsibility by the appointing organizations to develop standards to govern the employment and training of all apprentices in the trade by all employers in the group and by other

subjects related to his trade.

Responsibility for providing the related trade instruction rests in the local and state vocational schools. The joint apprenticeship committee usually is appointed by the school to act in an advisory capacity to it in developing the program of classroom instruction to be given the apprentices and to provide such continuing advisory service as is needed to assure a well rounded training program.

The procedures prescribe the manner in which written apprenticeship agreements are executed and registered with the state Apprenticeship Council; they outline the way in which apprentices will be supervised at work and at school and such other operating particulars as agreed upon by the employers and employees.

In the final apprenticeship system, the continuing responsibility of the joint committee will be defined. Usually in the building trades the employer and employee groups are given the joint committee operating responsibility. In the manufacturing industries the joint committee is given a continuing advisory responsibility; it exercises a review function rather than a direct supervisory function.

### National Joint Committees

A number of national employer associations and trade unions have appointed apprenticeship com-

*\*At the first annual convention last April a committee was appointed to study existing apprenticeship programs and recommend one program suitable for national usage. The committee is: Frank Kramer, Milwaukee, Chairman; J. W. Birthrong, Waukesha, Wisc.; Harry Wright, St. Louis.*

employers who may not be members of the employers' organization, but who are willing to subscribe to the written apprentice training system.

Included in the written program, besides the standards of employment and training, are procedures for the supervision and examination of the apprentices.

The employment standards establish qualifications for employment such as the amount of required education, aptitude, age limitations, wages, hours of work, and any other particulars which concern the apprentice as a worker. The training standards establish the term of apprenticeship, the schedule of job processes in which the apprentice is to be provided practical work experience through his employment, and the amount of time the apprentice will be required to attend classes to receive instruction in

mittees to meet as joint management-labor committees to develop national trade apprenticeship standards and to encourage local employer and labor affiliates to set up training programs for apprentices to conform to the national standards agreed upon. As joint committees they follow up the national programs, analyze results and work out suggestions and methods for the improvement of training in their industries.

These national joint trade committees are appointed by their own industries. However, they tie in very closely on a voluntary basis with the Apprentice Training Service. The latter provides continuing service to them in the form of statistical reports, copies of new local trade training programs, names of persons appointed by local groups to serve on joint committees and special reports or analyses

of trade training problems when requested. On the other hand, these committees furnish the Apprentice Training Service advice on the handling of special problems relating to or affecting training in their respective industries.

#### **State Apprenticeship Councils**

To conform to accepted relationships between the Federal government and the states as well as to secure the co-operation of interested state agencies and state associations of employers and employees, state Departments of Labor were requested to establish Apprenticeship Councils.

These state councils are made up of an equal number of representatives of employers and employees and usually a representative of the state Board for Vocational Education and a representative of the state Department of Labor.

Using the apprenticeship standards recommended by the Federal Committee on Apprenticeship as a guide, the state councils set up their own standards and procedures which industry will be asked to follow in employing and training apprentices.

After a State Council has been appointed and has prepared its standards and procedures it becomes a part of the national apprenticeship system by securing recognition from the Apprentice Training Service.

#### **Apprenticeship Policy**

Programs for the employment and training of apprentices should be jointly developed and mutually satisfactory to the employers and to the employees. That, in brief, is a basic policy of the Apprentice Training Service. Since apprentices are employed in a wide variety and constantly growing number of trades, the standards recommended by the Federal Committee on Apprenticeship are general in scope, leaving to the employers and employees in the different trades the responsibility for working out details. The following are the standards which guide the staff of the Apprentice Training Service in assisting industry to set up systems for the training of apprentices:

The term "apprentice" shall mean a person at least 16 years of age who is covered by a written agreement registered with a State Apprenticeship Council (where no such Council exists registration is with the Federal Committee on Apprenticeship) providing for not less than 4,000 hours of reasonably continuous employment for such person, and for his participation in an approved schedule of work experience through employment, which should be supplemented by 144 hours per year of related classroom instruction.

Where it is more practical the employer and his employees, if the latter have an organization, are encouraged to set up a plant joint committee to prepare in writing an apprenticeship system to define the conditions of employment and training for apprentices in the plant. Both types of committees usually make provision, especially where apprentices are employed in plants, for a full or part time supervisor of apprentices and describe his functions in relation to those of the committee.

Where employees in a plant do not have an organization or where the existing employee organization is not particularly concerned with the training of skilled workers, the employer establishes his own apprenticeship system and registers it with his State Council.

Since the State Council is made up of equal employer and labor representation and has agreed upon basic standards for the training of apprentices, its review and registration of the employers apprenticeship system is construed as meeting the basic policy of the national apprenticeship system.

#### **Placement of Apprentices**

The local trade or plant written apprenticeship system specifies the day in which applicants will be selected and employed. Usually, there are more applicants for employment as apprentices than there are openings to be filled. First opportunities are in many instances offered the sons or daughters of workers in the particular industry provided they can meet the standards established for entrance into the trade as apprentices. Other apprentices are selected from the registers of the local office of the U. S. Employment Service. With respect to placement of applicants, close co-operation should be established between the local joint committee, the local vocational school and the local office of the U. S. Employment Service.

#### **Apprenticeship-for Adults**

Economic conditions as well as the employment needs of particular industries have a significant influence in determining the age groups from which apprentices will be drawn.

In times of economic depression, when employment opportunities are limited, there is a far greater number of candidates for apprenticeships than there are training jobs to fill. The tendency under these circumstances is to set high standards which must be met by the candidate before he is considered for training. Likewise, the average age for beginning apprentices tends to move up to 18 or 19; and because many workers who later become apprentices will have entered the trades as helpers or in some such capacity, the average age for apprentices in many programs may be well over 20. Under these conditions, apprentice training becomes virtually a training program for adults rather than for youth, and industry is relieved of the responsibility of developing the man and can concentrate on the development of skills.

As economic conditions improve and it is no longer difficult for workers in any age group to secure employment at good wages, there arises the problem of securing capable candidates for apprenticeship. Under these conditions the pendulum of selection swings again to favor those in the younger age groups.

#### **Apprenticeship at War**

Like all other institutions in our national life, apprenticeship is being adapted to assist in winning victory and to prepare for beating our swords into plowshares.

In industries where it is essential to have all-round skilled workers to produce, service or maintain material or services necessary to the war effort, joint apprenticeship committees and employers are advised and assisted to set up apprenticeship programs to train adults who are not likely to be called to military duty.

In industries which are not in immediate need of the services of all-round skilled workers, joint committees and employers are being advised and assisted to set up apprenticeship programs for youths 16 and 17 years of age.

# Interpretations, Amendments, Easements To Existing Orders

## Amended L-41

**C**HANGES in the construction limitations applicable to authorized building projects, which reflect recent modifications in WPB orders governing materials and equipment used in construction, have been incorporated in an amendment to Schedule A to Controlled Materials Plan Regulation No. 6.

The revised restrictions are applicable to all construction authorized on Form GA-1456 on or after February 17, 1945, following approval on Form WPB-617. They do not, however, apply to housing construction authorized by the National Housing Agency. Limited Preference Rating Order P-55-c.

Form GA-1456 is used to authorize most commercial, industrial and agricultural construction controlled by Conservation Order L-41, the basic construction order.

Because of the current shortages of sheet steel, the amended schedule restricts the use of various fabricated items made of sheet metal and strip.

*C. Steel sheet and strip (produced on a sheet or strip mill).*

1. The use of steel sheet and strip is prohibited.
2. The use of the following manufactured items (purchased as such) when made from sheet or strip is prohibited:

Doors, door frames, shutters, jambs and trim except for the following uses:

- (a) In bombproof and splinterproof structures.
- (b) Fire doors, including shutters.
- (c) In standard finance vaults and in narcotic storage spaces.
- (d) For hangar doors designed for an opening used for the passage of aircraft.

Partitions, except toilet.

Portable Buildings

Roofing and siding, except extensions to existing buildings where such materials are in use and will be retained.

Stacks, smoke, except evacuation tubes not over 30 feet high superimposed upon fans.

Ventilation and heating ducts except for transitions, fittings, connections, and changes in direction, and for straight runs where metal is required by applicable building codes.

Solder and tin uses are also amended as follows:

*I. Tin.* The use of tin and tin products is prohibited except as follows:

1. Solder:
  - a. Not over 40 per cent tin in solder (i) for wiping water service pipe, connecting the piping of a structure with the outside water main, (ii) for assembly and repair of galvanized iron or zinc tanks.
  - b. Not over 35 per cent tin in solder (i) for assembly and repair of galvanized iron items (except tanks) where the assembly is done with a "soldering iron," (ii) for wiping lead sheathed cable joints or lead pipe joints.
  - c. Solder for electrical connections may be used only to the extent that solderless connectors, not containing copper or copper-base alloys, will not serve, and then not over 35 per cent tin content.
  - d. Not over 30 per cent tin in solder for all other uses not covered above, and then only to the extent that substitution of either a less critical material or use of less in content is impracticable.

2. Roofing—but only terne plate for repair purposes. Many items of new equipment must be applied for on special application forms, among such are:

Dust collecting equipment, industrial.

*Oil-fired equipment and natural gas-fired equipment, whether new or used (specify on the application which items are to be oil fired and which natural gas fired.)*

Turbo blowers and turbo exhausters.

Vault doors of iron or steel.

Copies of Construction Limitations (Schedule A to CMP Regulation No. 6) as amended February 17, 1945, are available at all WPB district offices, and should be consulted by all builders holding a Form GA-1456, irrespective of when such authorization was issued, WPB said.

## Revised Deferments

**D**ETAILS of the plan approved by the Office of War Mobilization and Reconversion governing the procedure for making requests for deferment of a limited number of men under 30 years of age who hold key positions in "war industries" call for the filing of a new form, known as the Form 42A (Special Revised), for registrants under 30 for whom occupational deferment is sought, and for certification by agencies in the Government responsible for procurement and production of war goods and those responsible for the maintenance of essential services, in order to aid local boards in determining which registrants, in the interest of the war effort, should be given the most serious consideration for occupational deferment.

Employers may file the new form with the local board even though certification has been denied by the Federal Government agency having jurisdiction. It may also be filed if the employer does not come within the jurisdiction of any Federal agency. The local board will be empowered to grant or deny the deferment request as its judgment of all facts available dictates, but the boards are instructed to give the certified requests the most serious consideration.

Under the new regulations registrants of the ages 30 through 33 to be eligible for deferment must be "necessary to and regularly engaged in" an activity in war production or in support of the national health, safety or interest. Previously it was only required that registrants in this age group to be eligible for deferment be "regularly engaged in" an activity in support of the national health, safety and interest or an activity in war production.

If all other factors are equal, a father should be given greater consideration for occupational deferment than a nonfather in this age group.

"Merely the determination is required that the registrant 34 through 37 is 'regularly engaged in' an activity in war production or in support of the national health, safety or interest."

Physically fit men in the 30- through 37-year-old group—especially those under the age of 34—are confronted with the prospect of induction "to the extent necessary to fill the calls."



## Will Insurance Regulations Become A Barrier To Veterans Employment?

Q UOTING from the Miami Herald of February 16, 1945: "Insurance Regulations are preventing many handicapped war veterans from taking employment in essential war industries after their discharge from the armed services. This was revealed Thursday by Dan Acosta, veterans employment representative at Tampa. He cited the case of James W. Harris, 23, Clarksville, Tenn., who lost three fingers in a saw at Pearl Harbor, and recently was given a job as a shipfitter's apprentice at a Tampa shipyard. The physician employed by the insurance company covering the yard's employees turned him down because of his injured hand. The foreman maintained that Harris could do the work of an apprentice despite his injury—etc., etc."

The above case is one from many come to light during the past months. Employees' Group Insurance, we all know, is based on "safety" installations and their observance by the manufacturer or shop owner. Without such "safety" being strictly maintained, the Group Insurance could not exist. By now this insurance is in force in every sizeable shop throughout the States. The Insurance Companies have millions upon millions of dollars engaged in this kind of insurance. By admitting "disabled" or "handicapped" veterans to work side by side with other workers in industry, the lives and limbs of the workers undoubtedly would be endangered—and the whole system of Group Insurance would fall.

Now then what is a "disabled" veteran or a "handicapped" veteran? With veterans returning from the Pacific jungles and the merciless experiences with the Japs, the "disability" might consist also in "shattered" nerves. With the veterans returning from the European battlefields, this nerve-disability might be less, but it still will show. You cannot eradicate from the minds of this kind of veteran the memory of the "shocks" which he experienced. He will fall into "dazes" standing at a machine, operating a crane or conveyor system, or even just "helping" at this or the other task. He will fall into nervous tension at the noise of the machinery or at seeing a crane or other mechanical monster move

his way. He will experience "dazes" even when working in an office, compiling figures or just attending to the files.

It is not the insurance companies alone who will object to the "disabled" veteran working side by side with the men subject to the Group Insurance. It will be—when the competitive phase of industrial enterprise returns after the government (the taxpayer) ceases to bear the costs—the manufacturer and the shop owner himself who will be vitally concerned with the above. In competitive industry it is necessary to eliminate all handicaps to efficient, smooth, low-cost productive capacity. There must be an orderliness in everything; even the "watchman" at the gate must be alert and efficient at all times. And it is more the "example" of the one "disabled" that he gives to the rest of the personnel than it is his own slipping and its cost, that will weigh heavily against his employment in private industry.

Literature is being sent to Chambers of Commerce and others, proposing the establishment of co-operative business enterprises for the Veterans of World War II. It is proposed that the veterans themselves compose the co-operative (with insurance of their own), obtain contract work for the members of the co-operative to do, collect for the work, and pay the members doing the work. A great variety of work can be contracted for by the veterans. With a consulting body of their own analyzing the work, directing the work, being financially responsible for the flawless execution of the work—there seems to exist no valid reason why the veterans (of whom not everyone will be a nervous wreck), could not contract for such work, do it, and prosper at it.

With 10,000,000 or more veterans returning to civilian pursuits soon, the co-operative of, by, and for, the veteran should be studied and if found workable, should be inaugurated. The alternative obviously is a government (taxpayers) subsidization of (mostly non-productive) works which would give employment and a wage to the men rejected, for one or other reason, from work in private industry.

# On Our Industry's Front

## Manual Schools for Dealers

**A**N important activity of the newly organized "dealers division" of the National Warm Air Heating and Air Conditioning Ass'n will be schools for dealer education and training. This activity was explained in AA, February issue in the "Association Says" page.

Preparatory work for these school is under way and can be reported as follows:

Under the leadership of Dealer Education Committee Chairman Jack Stowell, a school is being planned for the Fox Valley area of Illinois. The school will probably be one day and G. A. Voorhees will be the instructor. Get details from Jack Stowell, 321 N. Highland Ave., Aurora, Ill.

Codes Committee Chairman W. D. Redrup and G. A. Voorhees are making plans for a school in Indianapolis and probably another in Ft. Wayne in the near future. Get details from W. D. Redrup, Majestic Furnace Co., Huntington, Ind.

Codes Committee members F. R. Bishop, Ed. Root and Bob Champlin have started a school under the sponsorship of the Detroit Warm Air Furnace Contractors Ass'n to be held the first four Saturdays in March. Sessions will begin in the morning and continue into the afternoon. Get details from F. R. Bishop.

Newt T. Hess, engineer, Vorys Brothers, Columbus, Ohio, conducted a one-day school for Columbus area on March 2, 1945. Other schools are planned for Springfield and Zanesville.

◆

## Gas Furnace Advisory Comm.

**T**HE newly appointed industry advisory committee representing manufacturers of gas-fired furnaces recently held its first meeting with officials of OPA and elected the following officers:

Chairman—F. C. Packer, assistant to president, Payne Furnace Co., Beverly Hills, Calif.

Vice-Chairman—Arthur Wrieden, general manager, Lennox Furnace Co., Syracuse, N. Y.

Secretary-Treasurer—C. B. Kuhn, secretary and treasurer, Coleman Lamp and Stove Co., Wichita, Kan.

Other members of the committee are: C. O. Butler, president, Mayflower Conditioners, Inc., St. Paul, Minn.; E. M. Bricker, sales manager, Fraser and Johnston Co., San Francisco; Arthur Martinsen, president, Hammel Radiator Engineering Co., Los Angeles; Gordon Rieley, vice-president, Bryant Heater Co., Cleveland; James R. Scott, assistant to president, L. J. Mueller Furnace Co., Milwaukee.

Representatives of the industry said at the meeting that the majority of manufacturers of gas-fired furnaces were primarily engaged in war work. The discussions were centered chiefly around the problems and methods of operation peculiar to the supply of this type of commodity during the present war emergency and that will confront the industry during the post-war reconversion period.

## WMC Is Checking Employers

**E**MPLOYERS of all types throughout the country are being checked to determine to what extent they are complying with priority referrals, employment ceilings, manpower utilization techniques and other regulations of the War Manpower Commission. The new inspection program began February 1. The survey is being made by inspectors of the Wage and Hour and Public Contracts Divisions of the Department of Labor.

Important among the regulations to be systematically checked under the new program will be the operation of the minimum 48-hour week in those areas where it has been specified by WMC. This has consistently resulted in increased production by experienced workers in the affected plants, in contrast to hiring new or inexperienced help. The total of areas where the 48-hour week is now obligatory is about 200. Of these, 71 are in the Group I areas and 119 are in Group II, in both of which the 48-hour work week is automatically required, and about 10 are in Group III, where the longer work week has been specifically instituted in certain communities by direction of WMC.

## Home Repairs Increase

**N**EARLY 390,000 American families financed urgently needed home repairs and maintenance last year with funds advanced by private financial institutions and insured by the Federal Housing Administration.

Loans reported during 1944 by these institutions for FHA insurance under Title I of the National Housing Act numbered 389,592 and amounted to \$125,150,082, compared with 308,161 such loans for \$96,373,881 reported during 1943.

This increase, says FHA, can largely be explained by necessities which arise from a continuation of the war emergency during which these loans may be made for three purposes only—repairs necessary for health or safety, to provide additional quarters for war workers, and particularly for such installations as insulation, weather stripping, storm doors and windows to help in the conservation of fuel.

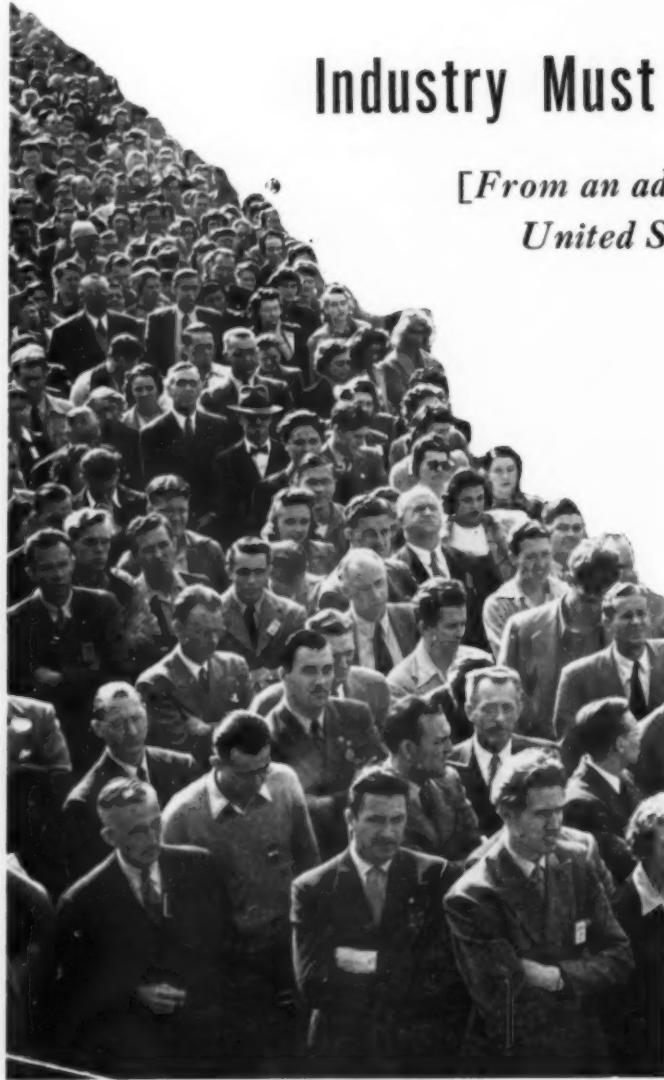
It is estimated that property repairs and improvements in the first 12 months after building restrictions are removed will probably aggregate \$3,000,000,000. The FHA has sufficient authorization under Title I to insure a financing volume conservatively estimated at around a billion dollars.

## Oil for Large Space Heaters

**A**PPROVAL of the Petroleum Administration is now required before any kind of fuel oil can be used in commercial or industrial space heaters that are installed after February 26, 1945, and which singly or in combination burn 10,000 or more gallons a year.

Such action had not been necessary until now be-

*(Continued On Page 139)*



# Industry Must Provide Steady Employment

[From an address by Eric Johnston, President,  
United States Chamber of Commerce]

odd jobs where he can find them—he is a frequent victim of *casual unemployment*.

5. *Cyclical unemployment*. None of us can forget the dismal, disheartening, distressing days of the depression. Human wants were great, many of them were unsatisfied, but the motor of our economic machine was stalled.

6. *The unemployables*. You all know the man who can't get along with his foreman or his fellow workers, who hasn't the ability or strength to hold on to his job. His problem is physical or psychological, not economic.

These are the six major causes of unemployment. American business must do something about it.

Steady employment generally has not had enough attention from top management. Finance, purchasing, sales and production have come first. There are thousands of ways in which industry can take positive action.

Whether a man works throughout the year or not, he nevertheless eats every day, his rent is due every month, and his other living expenses continue. Therefore, the demand for wages by the year is a natural one. Can a free society meet it? If not, it may be forced upon us.

A leading manufacturer, in explaining the origin of his annual wage plan, said that management expects a little too much in asking that labor be loyal and faithful when factory workers know that they are the first to be separated from the establishment if business clouds begin to appear upon the horizon. He saw distinct benefits to worker morale and improvement in industrial relations as a result of institution of the annual wage plan.

What about the economics of annual wages? The temper of the times encourages "easy solutions," panaceas, and people are impatient of difficulties. "Let's pass a law" is too frequently proposed as a ready solution. But in the world of economics there are no patent medicine cure-alls. He who demands a pat solution to any and every problem must face the hard fact that not all so-called "solutions" really solve the problem.

I think it is a mistake to force annual wages down the throats of management by government order. This problem goes to the roots of our free society and its freedom may be destroyed if we use the wrong means to gain the right ends. By forcing business into a strait-jacket the job regularity attained might be more than offset by the loss of our traditional American freedom. If everyone *must* pay an annual wage, many will hesitate to engage in business. Then the government would be tempted to step in and become the employer, as is the case in Russia today.

We must always remember that wages are paid, not

(Continued on Page 144)

**S**TEADIER jobs are the vital concern of every business man, every wage earner, every housewife. There is no universal plan that will fit every business. Many plans already are in operation. Many others are under way. Unemployment compensation, of course, provides half rations for a limited period, but it is no adequate substitute for regular employment.

## Unemployment Causes

Unemployment is a complex problem. Beware of the zealot with a panacea. There is no *one* cause of unemployment and, therefore, there is no *one* remedy. If a thousand unemployed persons were asked to give you the real reasons for their unemployment, you would get six major answers:

1. *Seasonal unemployment*. Your wife doesn't buy Christmas toys in July. You don't take your fishing trip in December.

2. *Seasonal supply*. Nature matures fruits, vegetables, and other crops—you cannot harvest them until they are ripe. You don't eat them out of season.

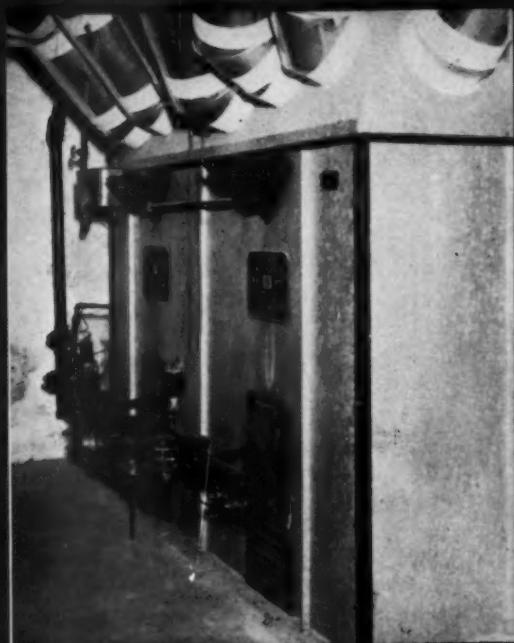
3. *Technological unemployment*. The radio displaced the phonograph; the automobile displaced the horse and buggy; the two-way-stretch girdle displaced the whalebone corset.

4. *Casual unemployment*. The man who picks up

AMERICAN ARTISAN

# RESIDENTIAL AIR CONDITIONING

S E C T I O N



DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING

# W

## GET IN LINE

### FOR POST-WAR PROFITS

We have booked so many orders from so many dealers who want Waterbury Furnaces this year that we can't take on any more new accounts for 1945 deliveries.

#### We Must Take Care of Our Established Trade

But it is none too early to be thinking of next year. With controls removed and war-work less urgent, Waterbury will be ready with—

1. A Complete New Line
2. Furnaces of Modern Design
3. Up-to-date Equipment to make these furnaces in much greater numbers than before.

And this will spell opportunities for more Jobbers and Dealers to participate in the profit-making possibilities of the Waterbury line in 1946.

If you want the backing of an aggressive company and a top quality line of furnaces—

If you are planning your furnace business for 1946—

Get In Touch  
With Waterbury



The Gastite Furnace  
Moderate In Price  
High In Quality

Keeps  
Gases and  
Dust Out of the  
Heat  
Stream

**THE WATERMAN-WATERBURY COMPANY**

1122 Jackson St. N. E., Minneapolis, Minn.

# We Can Simplify Our Engineering by Using One Bonnet Temperature\* [Part 1]

WARM air heating dealers generally are acquainted with the Gravity Installation Manual prepared by the National Warm Air Heating & Air Conditioning Ass'n and in use now for several months. A second manual, "Application Manual for Forced Warm Air Heating Systems," has been prepared by the same association and is now out for study and suggestions by a selected group of engineers and members of the industry. This forced air manual was introduced at the last Michigan State College Short Course. It is hoped that necessary revisions will be completed so that the manual will be ready for the industry to use by the end of this year. Both these manuals are the work of Professor Konzo.

Those who have seen the new forced air manual and contractors will understand when they get copies, that considerable simplification of the Technical Code has been effected in the manual by eliminating all choice of register air temperature and by using one bonnet temperature of 165 degrees. By these changes one choice (register air temperature), one calculation (bonnet temperature) and one decision (the number of air changes) have been eliminated in the manual.

Contractors may wonder why these determinations have been eliminated and may ask if the manual results in satisfactory operation. The decision was not made arbitrarily, but stems from a report by Professors Kratz and Konzo, "Performance of a Forced Warm Air Heating System as Affected by Changes in Volume and Temperature of Air Recirculated," presented at the semi-annual meeting of the American Society of Heating and Ventilating Engineers, St. Paul, Minn., June, 1942, and published in *Heating, Piping and Air Conditioning*, ASHVE Journal Section, June, 1942. This report showed that: (1) At a bonnet air temperature of approximately 150 degrees and a register air velocity of approximately 600 fpm, the variations in the fan delivery equivalent to from three to six air recirculations per hour had no immediate bearing upon either the successful operation of the plant or the comfort conditions produced, and (2) with intermittent operation of the heating plant at an approximately constant bonnet air temperature, although the fan air delivery varied from three to six air recirculations per hour, the average air recirculations per hour, including both on-periods and off-periods, remained constant.

This report seemingly substantiates the simplification mentioned. A brief summary of this investigation follows:

## Introduction

Considerable flexibility exists in the choice of air volumes and air temperatures to be used in the design of a forced warm-air heating system. For a given structure, the design of the duct system may be based on the use of either a large volume of air at a rela-

tively low register air temperature or a smaller volume of air at a higher register air temperature. Furthermore, after the system is installed, satisfactory performance may be obtained even though the actual combinations of air volumes and register air temperatures encountered deviate widely from those assumed for the design of the duct system.

This flexibility in conditions affecting both the design and the operation of a forced warm-air heating system may be considered as an advantageous feature, inasmuch as any reasonable deviations in the operating conditions from those assumed for the design can be readily compensated for by relatively minor changes in the plant. On the other hand, this extreme flexibility in the choice of both design and operating conditions has resulted in the development of many *rule of thumb* methods and unconfirmed theories.

Proper development of any method of heating which is undergoing continual evolution and improvements in technique, requires that basic facts be substituted for *rules of thumb*. One of the prevailing theories of design is that in the case of a forced warm-air system installed in a well insulated structure, a certain minimum number of air recirculations, commonly referred to as air changes, is essential for satisfactory operation. For the purpose of determining whether or not the plant performance as affected by independently varying the quantity and temperature of the air circulated had an adverse effect on the environment produced, several series of tests were conducted in the Warm-Air Research Residence during the winter seasons of 1939-1940 and 1940-1941. In the first season the tests were made with the 12 warm-air registers located in the baseboard, and in the second season the tests were repeated with the same number of warm-air registers located in the sidewalls and approximately 7 ft. above the floor.

In order to make direct comparisons between the results obtained with the various methods of operation, only one change at a time was made in the items specifically under observation; namely, register location, air volume, or the setting of the bonnet thermostat.

The heating plant consisted of a cast-iron, circular-radiator warm-air furnace used in connection with a forced-air heating system. The furnace was fired by means of a coal stoker of the underfeed type.

The heating plant was controlled by means of a room thermostat operating to start and stop the stoker motor, and to start and stop the circulating fan. This room thermostat was of the heat-anticipating type, and was used in conjunction with two bonnet thermostats which served as high and low limit controls for the temperature of the air in the furnace bonnet. When the room thermostat operated to start the fan and stoker, one bonnet thermostat (fan control) prevented the fan from starting unless the bonnet temperature was above 125 F, except for the series of tests in which the bonnet thermostat settings were changed in order to determine the effect of varying the air temperature. Similarly for all tests, except those in which the bonnet thermostat settings were

\*Conclusions from a series of studies reported at the semi-annual meeting of the ASHVE, June, 1942, and published as a paper—"Performance of a Forced Warm Air Heating System as Affected by Changes in Volume and Temperature of Air Recirculated" in the June, 1942, issue of *Heating, Piping and Air Conditioning*.

Table 1—Sizes of Warm Air Registers

| ROOM               | BASEBOARD<br>REGISTERS,<br>INCHES | HIGH<br>SIDEWALL<br>REGISTERS,<br>INCHES | STACK SIZE<br>ABOVE BASEBOARD<br>REGISTER,<br>INCHES |
|--------------------|-----------------------------------|--|--|
| Living.....        | 12x6                              | 14x5                                     | 3 $\frac{1}{4}$ x14                                  |
| Hall.....          | 14x4                              | 14x4 <sup>b</sup>                        | 3 $\frac{1}{4}$ x14                                  |
| Dining.....        | 12x6                              | 12x4                                     | 3 $\frac{1}{4}$ x12                                  |
| S. Sunroom.....    | 12x10                             | 12x4                                     | 3 $\frac{1}{4}$ x12                                  |
| N. Sunroom.....    | 12x10                             | 12x4                                     | 3 $\frac{1}{4}$ x12                                  |
| Kitchen.....       | 14x10                             | 14x4                                     | 3 $\frac{1}{4}$ x14                                  |
| E. Bedroom.....    | 12x6                              | 12x6                                     | 3 $\frac{1}{4}$ x12                                  |
| S. W. Bedroom..... | 12x6                              | 12x4                                     | 3 $\frac{1}{4}$ x12                                  |
| Bath.....          | 10x8                              | 10x4                                     | 3 $\frac{1}{4}$ x10                                  |
| N. W. Bedroom..... | 12x10                             | 12x4                                     | 3 $\frac{1}{4}$ x12                                  |
| E. Dormitory.....  | 12x10                             | 10x4 <sup>b</sup>                        | 3 x10  |
| W. Dormitory.....  | 12x10                             | 10x4 <sup>b</sup>                        | 3 x10  |

<sup>a</sup> Description given in University of Illinois, Engineering Experiment Station Bulletin No. 318, pages 15 and 16.

<sup>b</sup> Registers approximately 6 ft above floor, all others 7 ft above floor.

changed, the other bonnet thermostat (limit control) prevented the stoker from starting unless the bonnet temperature was below 150 F. Both the fan control and limit control were incorporated in one container and the adjustment of the thermostat indicator changed the setting of both controls simultaneously. The temperature differential between the fan cut-in point and the fan cut-out point was approximately 40 F.

### Results of Tests

*Variations in Air Volume Delivered from Baseboard Registers (Series 2, 4, 5-39):* For each series of tests, data were obtained over a wide range of outdoor weather conditions, and were plotted as points on graphs in which the abscissae were indoor-outdoor

Table 2—Summary of Test Series

| SERIES<br>NO.     | SEASON  | REGISTER<br>LOCATION | AIR VOLUME,<br>CFM | FAN CUT-OUT<br>POINT, F |
|-------------------|---------|----------------------|--------------------|-------------------------|
| 2-39              | 1939-40 | Baseboard            | 1675               | 125                     |
| 4-39              | 1939-40 | Baseboard            | 1300               | 125                     |
| 5-39              | 1939-40 | Baseboard            | 800                | 125 150 <sup>b</sup>    |
| 1-40              | 1940-41 | High wall            | 1675               | 125                     |
| 7-40              | 1940-41 | High wall            | 1300               | 125                     |
| 5-40              | 1940-41 | High wall            | 800                | 125 154 <sup>b</sup>    |
| 4-40              | 1940-41 | High wall            | 800                | 137 <sup>b</sup>        |
| 6-40              | 1940-41 | High wall            | 800                | 179 <sup>b</sup>        |
| 3-40 <sup>a</sup> | 1940-41 | High wall            | 800                | 137 <sup>b</sup>        |

<sup>a</sup> Full register opening resulting in average register air velocity of approximately 200 fpm, whereas all other tests with high wall registers were made with 600 fpm register air velocity.

<sup>b</sup> Mean bonnet air temperature determined by average of maximum and minimum values. For the tests with 800 cfm the mean bonnet temperature is of greater significance than the fan cut-out point as determined from the setting of the bonnet thermostat.

temperature differences. A curve was drawn through the points representing each series of tests, and the values obtained from the curves at indoor-outdoor temperature differences of 34 F and 55 F were selected as typical of average and relatively cold winter days respectively. The values so obtained have been plotted in Fig. 1.

In Fig. 1 the circled points and the full line curves show the significant results obtained for baseboard registers with various air deliveries on a day in which the indoor-outdoor temperature difference was 55 F. The top set of curves, showing the maximum and minimum values of the bonnet air temperatures, indicate that, although no change was made in the setting of the bonnet thermostat, the range of bonnet air temperatures was slightly higher with low air deliveries. This may be accounted for by the fact that the rate of heat evolution in the furnace was always about the same, even though the rate of heat transfer from the furnace to the circulating air was slightly less with low air deliveries than it was when higher air deliveries were used. The increase in the range of the bonnet air temperatures accompanying low air deliveries was of the order of only 10 F, and hence was not sufficient to result in any increases in basement temperature or fuel consumption, or in any temperature unbalance in the rooms.

The curve designated as calculated register temperature represents the register air temperatures that would have been used in the design of different forced-air systems for the Research Residence, based on the calculated heat losses for the Residence and the various air deliveries shown in Fig. 1. In order to offset the heat loss from the rooms, either a large air delivery accompanied by low register air temperature or a small air delivery accompanied by a high register air temperature would be used. In this case, in which the Residence was insulated, air deliveries of 1675 cfm, 1300 cfm, and 800 cfm were accompanied by design register air temperatures of 94 F, 103 F, and 131 F, respectively, corresponding to calculated mean bonnet air temperatures of 102 F, 115 F, and 151 F. For the tests shown in Fig. 1 the setting of the bonnet thermostat was not changed, and hence the actual mean bonnet air temperatures were not adjusted to conform to the lower calculated bonnet air temperatures when large air deliveries were used. With the greater air deliveries, the calculated mean bonnet air temperatures were lower than the actual, and hence the total time of fan operation was not as great as it would have been if design conditions had been met. In this respect the results tended to favor to some extent the operation with low air deliveries. However, satisfac-

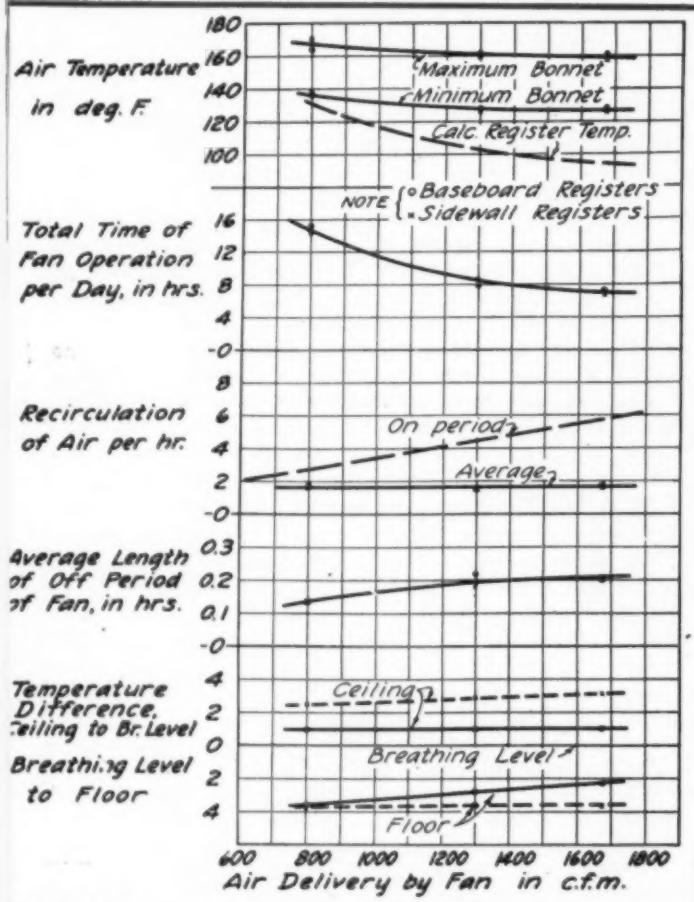


Fig. 1—Performance of baseboard and sidewall registers with various air deliveries  
Temperature difference of 55 F indoor to outdoor bonnet setting 125 F. Stoker-fired furnace

tory operation was obtained with an air delivery of 1675 cfm, indicating the flexibility of the plant even under conditions when the operating air temperature deviated from the design air temperature.

The total time of fan operation per day, as indicated in the second set of curves from the top of Fig. 1, was approximately twice as great for 800 cfm delivery as it was for 1675 cfm delivery. However, the electrical input to the fan, expressed in terms of watt-hours per day, was slightly less for the lower air delivery. Hence reducing the speed of the fan resulted in an increase in operating time with no increase in electrical input.

The circulation of 1675 cfm during the *on-period* operation of the fan was equivalent to 5.73 recirculations per hour. If no circulation was assumed to occur during the *off-periods* of the fan, a weighted average value for both *on-periods* and *off-periods* of 1.75 recirculations per hour was obtained. Corresponding values for 800 cfm air delivery were 2.74 recirculations per hour for *on-period* fan operation alone and 1.75 recirculations per hour for the weighted average of *on-periods* and *off-periods*. Hence, the average air recirculation per hour remained constant over a very wide range of air deliveries by the fan, while the *on-period* delivery increased from 2.74 to 5.73 recirculations per hour.

Comfort conditions in the room are improved by any decrease either in the length of *off-periods* of the fan or in the temperature difference between the floor and the breathing level. The lower two sets of curves in Fig. 1 show that an air delivery of 800 cfm resulted in shorter *off-periods* for the fan, but in a slightly larger temperature differential than those occurring with an air delivery of 1675 cfm. The temperature differences shown are the averages for 10 rooms in the Residence, including the relatively large differences obtained in the sun room and the two dormitories. If the open areas of the baseboard registers had been reduced as the air deliveries were lowered, so that a constant register velocity was maintained irrespective of the fan delivery, it is possible that the floor temperatures would not have decreased to the extent shown. In any case, the differences obtained in the length of *off-periods* and in the temperature differential were not of great significance.

### Results from High Registers

*Variations in Air Volume Delivered from High Sidewall Registers (Series 1, 5, 7-40):* The points indicated by crosses and the broken line curves in Fig. 1 show the results obtained with high sidewall registers. The points shown on the four upper sets of curves indicate that no distinction could be made between the results obtained with the baseboard and the high sidewall registers. With both register locations, lower air deliveries resulted in longer time of fan operation per day, the same average number of air recirculations per hour, and in shorter lengths of *off-periods* of the fan as compared with the corresponding results for higher air deliveries.

The lower set of curves indicates that with the high sidewall registers the floor temperature was not affected by the quantity of air delivered when the velocity of the air leaving the registers remained constant at approximately 600 fpm. A comparison of the floor and ceiling temperatures obtained with the two register locations shows that the floor was about 1.0 F warmer and the ceiling about 2.0 F cooler when the baseboard registers were used than they were with

the high sidewall registers. The differences are not material. If large sized registers are used in connection with low air volumes, resulting in low register air velocities, higher ceiling temperatures than those shown in Fig. 1, without material changes in floor temperature, might be anticipated. This is further discussed in the section on *Changes in Bonnet Air Temperature*. In this connection it is worthy of note that the use of high sidewall registers permits the employment of high register velocities and low register air temperatures without resulting drafts in the living zone, and the use of small registers that do not interfere with furniture placement.

Based on the results shown in Fig. 1 for both the baseboard and high sidewall registers it may be concluded that the number of air recirculations per hour had no immediate bearing upon either the successful operation of the plant or the comfort conditions produced when the bonnet thermostat was set to give a constant register air temperature of approximately 120 F. No data were obtained to demonstrate the result of operating the plant with a lower setting of the bonnet thermostat to obtain more nearly continuous fan operation at higher air deliveries, but under these conditions only slightly lower temperatures at the ceiling and higher temperatures at the floor level could be anticipated. The results shown in Fig. 1 further indicate that, under the usual conditions of design for intermittently operated plants and with reasonably good building construction, a register air temperature of between 110 and 140 F may be selected and the required air volume be determined from this temperature and the heat losses from the structure with reasonable assurance that the plant will operate satisfactorily. It is of course possible that in the case of poor construction in a severe climate a register air temperature greater than 140 F must be used in order not to exceed seven or eight air recirculations with the resulting difficulties from drafts.

The only feasible argument for the continued use of the arbitrary rule that *a minimum of five or six air recirculations per hour must be provided* is that in some measure it tends to compensate for the general tendency to underestimate the pressure losses in the duct system and through the furnace casing. In other words, in the case of a design based on a number of air recirculations per hour as small as three, the reduced air delivery resulting from greatly underestimated pressure losses would probably be more serious than a similar reduction brought about by underestimated pressure losses in the case of a system designed with a comparatively large number of air recirculations. Rules of this nature are but temporary expedients since a deliberate overestimation of air volumes is not the best solution for an underestimation of the pressure losses. The solution of the problem lies first in establishing a uniform method of rating furnace-fan units such that the air delivery of the unit is stated in connection with the external pressure loss of the connected duct system, and second in making accurate calculations of the pressure losses in the duct system. From the results obtained it is also apparent that the use of a large sized fan operated at slow speeds will not only provide quiet operation but will also result in short *off-periods*, and comparatively long time of operation with no increase in electrical input. Fundamentally, the success of the two-speed fan in the field has been due to the application of this principle.

[Part 2 will follow]

# American's Blueprint of POST-WAR Heating

## The "Moduflow" Control System

FOR the past two heating seasons two houses (Photo 1) of the Purdue Research Foundation at Purdue University, Lafayette, Ind., have been serving as test houses for the presently much discussed "Moduflow" principle of heating.

Some time ago, engineers of the Minneapolis-Honeywell Regulator Company developed a new system of controls which provides for a continuous heat input to offset the continuous heat loss from dwellings. This control system which is called Moduflow, was developed to provide real comfort from automatic heating through the elimination of drafts and cold floors which are prevalent in most modern homes and by cutting stratification to a minimum. The engineers believed that the continuous input of heat was necessary to accomplish all this. It is common knowledge, of course, that homes and other buildings are losing heat to the outside all of the time when the outdoor temperature is lower than the indoor temperature, but the rate of heat loss varies with outside weather conditions.

### Intermittent Operation Faults

To people inside, a change in the rate of body heat loss brings discomfort. Most automatic heating plants, even the most modern, operate intermittently. Actuated by a thermostat which is sensitive to temperature, the heating plant goes at full blast when the thermostat calls for heat, but when the thermostat is satisfied, no heat at all is delivered. At the same time the fan starts and stops on bonnet temperature set-

tings, the fan being idle while the burner is off. This causes stratification within the dwelling and results in drafts, cold floors, wasted heat at the ceiling, and certainly is one of the contributing factors to the frequency of common colds.

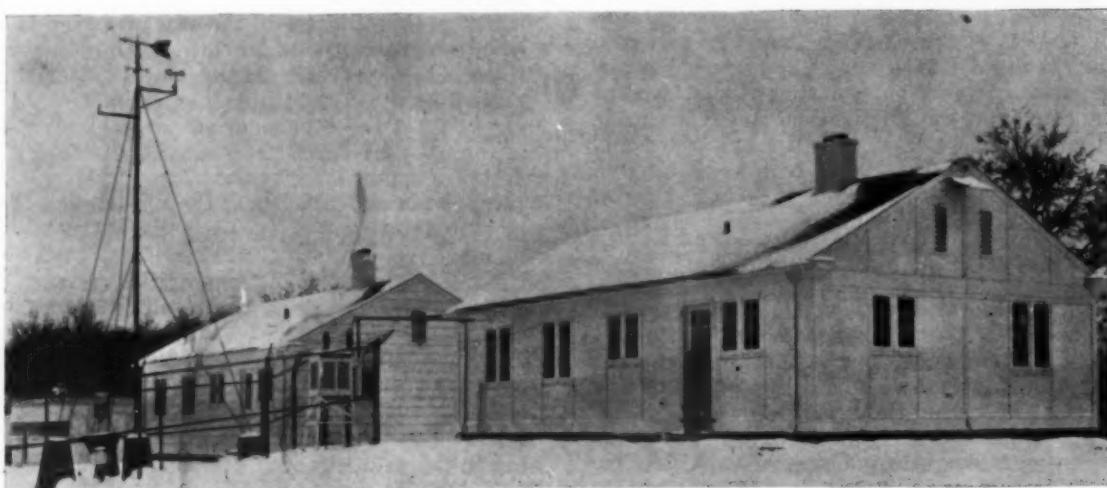
### Moduflow Corrects For "On and Off"

The way to correct all these ills of "on and off" firing of heating plants has been obvious for some time—modulate the fire. With a modulated fire it would be possible to adjust the heat input to exactly balance the heat loss of a dwelling and thus maintain a constant, even temperature within—drafts and cold floors would vanish.

But this little trick hasn't generally been successfully mastered except in elaborate commercial installations which are far too expensive for the average household.

Moduflow, however, accomplishes the same result with "on and off" firing by creating a reservoir of heat and delivering it to the living areas continuously, in the exact quantity required to balance heat loss. The control system can be applied to most types of automatic heating plants burning all types of fuel.

Up to the present time, three basic Moduflow methods have been developed. These are the "Reset Method" for forced warm air, and either forced or gravity hot water systems; second, the "By-Pass" method for forced warm air and for forced hot water systems; and third, the "Modulating Valve" method for two-



Rear of identical test houses at Purdue showing general size and type of house and weather station which provided continual weather data.



(Photo 2)—A "Moduflow" Reset Panel mounted in the furnace room. Note "by-pass" duct explained in text.

pipe steam systems. Each method provides exactly the same results.

With the Reset Method (Fig. 1) the amount of heat delivered to the house is controlled by two units. A thermostat measures the demand for heat in the house and then automatically resets the control point of the second unit—the temperature controller. This temperature controller (Photo 2) determines the exact amount of heat delivered to the house.

It's just like having two engineers constantly on the job. One upstairs is continuously reading the temperature of the house and telephoning to the other one in the basement that he needs a little more or a little less heat to maintain a constant temperature.



(Photo 3)—The test houses were equipped with direct recording and thermocouple temperature devices at several points between floor and ceiling.

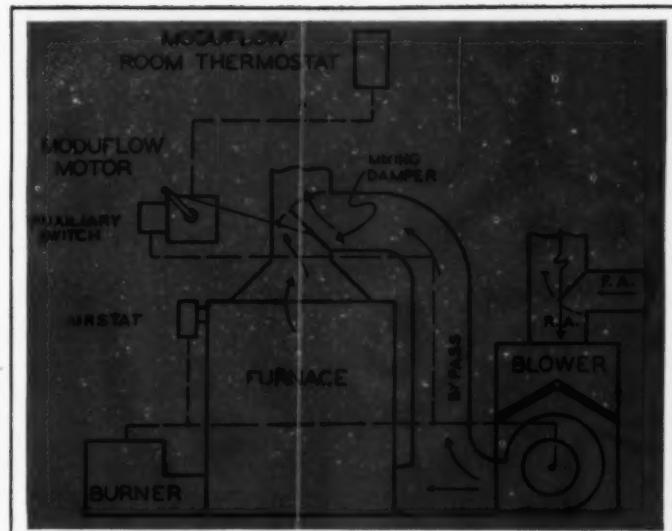


Fig. 2—Diagram of one form of "by-pass" system with "by-pass" outside casing and mixing damper and motor to control proportioning of heated and return air. (See text).

Only this telephone is going on continuously—any moment there is a temperature change in the house. Only a single thermostat is used for each furnace or boiler, and the flow of heat is continuous.

In this Reset Method, as the heat demand increases, the thermostat operates the reversible motor, which raises or "resets" the control setting of the temperature controller, calling for more rapid heat delivery. When the room temperature rises toward the thermostat setting, the motor reverses and resets the temperature controller to a lower setting, thereby decreasing the rate of heat delivery. When equilibrium between heat input and heat loss is reached, the burner operates to maintain duct air temperatures between

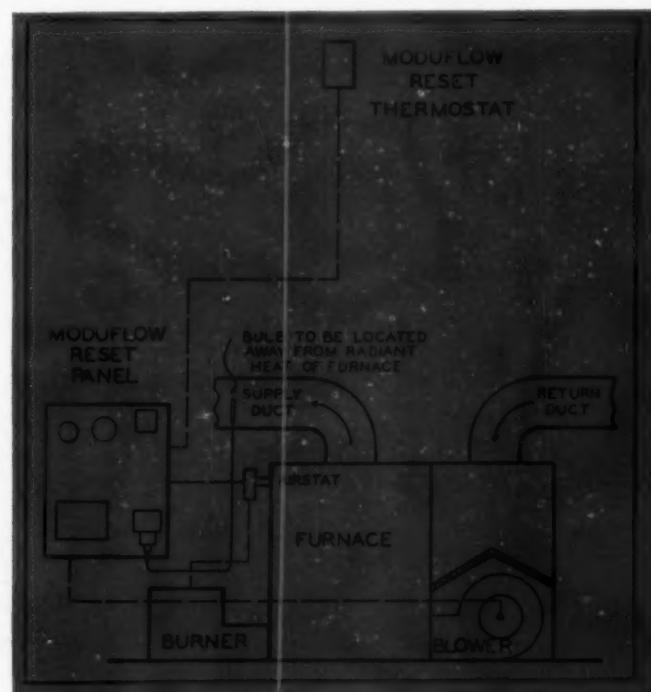
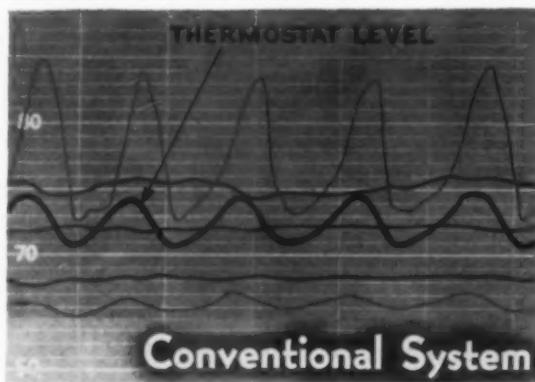
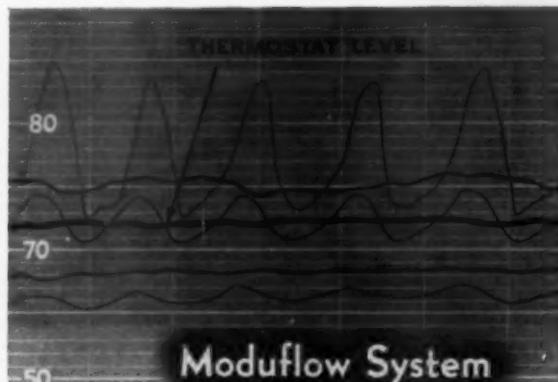


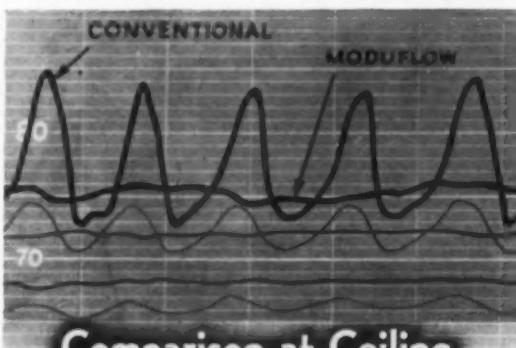
Fig. 1—Diagram of "reset" system. When heat is needed, thermostat "resets" temperature controller to obtain a higher bonnet temperature by running firing device longer.



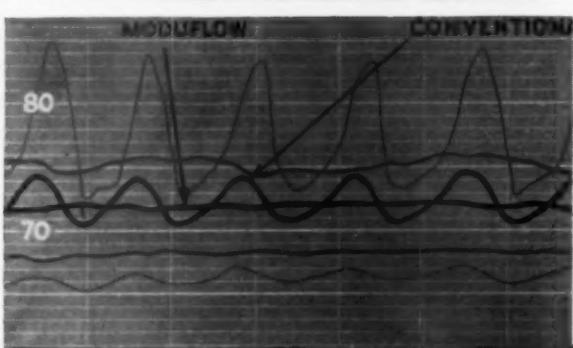
Conventional System



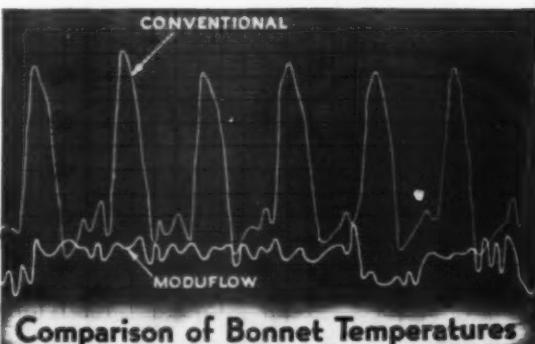
Moduflow System



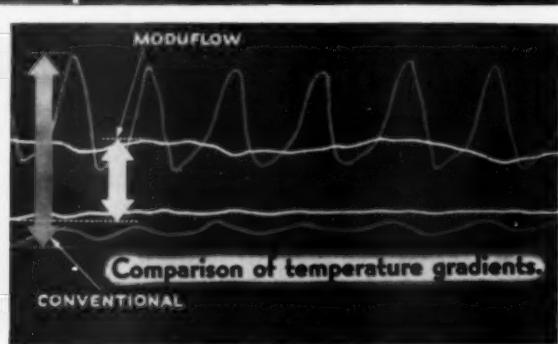
Comparison at Ceiling



Comparison at Thermostat Level



Comparison of Bonnet Temperatures



Comparison of temperature gradients.

Upper, left (Chart 1) Room temperature varies as much as 5 degrees with conventional "on and off" control. Upper, right (Chart 2) Room temperature with Moduflow control. Center, left (Chart 4) Comparison between ceiling temperatures with Moduflow and conventional control systems. Center, right (Chart 3) How Moduflow "levels off" temperature at thermostat level. Lower, left (Chart 6) Moduflow stops excessive bonnet temperatures, thus saving fuel and increasing efficiency. Lower, right (Chart 5) With Moduflow, floor-ceiling temperature difference decreases, floor temperature rises, ceiling temperature reduces.

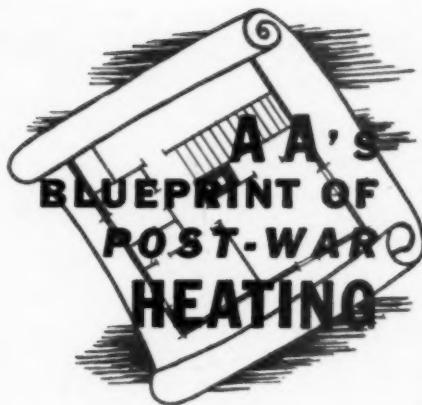
the differential range of the controller by frequent and short cycling of the burner. In mild weather the thermostat is quickly satisfied, the controller reaches its minimum setting and the end switch on the reversible motor shuts off the burner and the blower.

The By-Pass Method controls the amount of heat delivered to the house by measuring the demand for heat with a room thermostat which modulates a mixing device. This device mixes the cooler return air or water with the heated air or water to maintain a constant temperature. The flow of heat is continuous and the By-Pass Method may be used to provide single thermostat or zone control.

The By-Pass Method is thought to be especially suited to modernization of existing systems. The "by-pass" method may be of three types: (1) a duct from blower-furnace connection (Fig. 2) rising outside the casing and connecting to the plenum; (2) a duct outside the casing on any one of the three sides away from the blower (air passes *through* casing,

enters duct and rises to plenum without being heated); (3) an air passage built *inside* the casing on the blower side and emerging from the bonnet to connect with the plenum. Fig. 2 shows a typical outside duct design.

Each by-pass has a mixing damper which is automatically adjusted to vary the volume of air passing through the by-pass or through the casing. The thermostat controls the modulating motor which positions this damper. As the room temperature falls the damper closes in the by-pass so that more and more heated air enters the distribution system. As the room temperature rises the damper shuts off the volume of heated air and increases the volume of return air. Regardless of the damper position, the quantity of air supplied is constant. At all times, at least 10 per cent of the air volume should pass over the heating surfaces as a safety measure. An auxiliary switch on the damper motor stops the fan when the damper is wide open on the by-pass and also stops the burner. The burner is controlled by an Airstat in the bonnet,



set about 10 degrees above maximum register temperature, and starts and stops to maintain an average temperature in the bonnet.

All three methods are equipped with switches to cut off the source of heat when no heat is required in the house.

When the development work was completed and Moduflow tested in the laboratories and a few of the company's test homes, it was felt wise to submit it to the acid test of Purdue's "test tube village" where trained heating engineers could approach the subject with a fresh and unbiased view and would not be afraid to say what was wrong with it—if anything. What was wanted, in other words, was an honest, fair, unbiased and scientific opinion about Moduflow.

#### How Tests Were Made

The setup for the tests, which became more elaborate as they went along, is very interesting.

The test houses in which these projects were (and still are) being conducted are dimensionally identical—their plan arrangement, section and elevation are identical. Both houses were equipped with identical gas fired, forced warm air furnaces, but any other system could have been used, providing both were exactly the same. The important thing was that both heating plants be exactly alike.

Both houses are equipped with thermocouples throughout. These measure temperatures in all rooms at 3 inches from the floor, 30 inches from the floor, 60 inches from the floor, and at 3 inches below the ceiling (Photo 3). In addition, thermocouples are located half-way through the walls, on the outside and in the roof.

In the "back yard" of the houses, which stand side by side at one end of the university campus, is a complete weather station which automatically keeps a complete record of climatic conditions, for these too affect heating and heat loss. The weather station records wind velocity, wind direction, temperatures,

solar radiation, rain and snow fall and humidity.

This, then, was Moduflow's scientific proving ground.

Conventional on-off control was tried out in one house, while at the same time, in the other house and under identical weather conditions, Moduflow control was to show what it could do. All of this data was recorded by eight-point Brown Strip Recording Resistance Thermometers.

#### Results of Tests

The heavy line in Chart No. 1 is the temperature curve obtained at the thermostat level in the house where the conventional on-off control system was used on a typical day. The temperature ups and downs are characteristic of intermittent or on-off operation.

The heavy line on Chart No. 2 is the temperature curve obtained at the thermostat level in the house where the Moduflow control system was used on the same day. It can be seen that the Moduflow system goes a long way toward eliminating the temperature peaks and valleys which were obtained with the conventional on-off system.

This comparison of the temperature curves obtained at the thermostat level for both systems in Chart No. 3 emphasizes the different results. Remember, all other factors were equal. This is definite proof of the difference between the two systems.

Chart No. 4 shows a comparison of ceiling level temperatures obtained with the two systems. Note the 12-degree variation with the conventional on-off system as against a variation of only three degrees for Moduflow.

Chart No. 5 is a comparison of the temperature gradients between floor and ceiling for the conventional and Moduflow systems. The difference is striking.

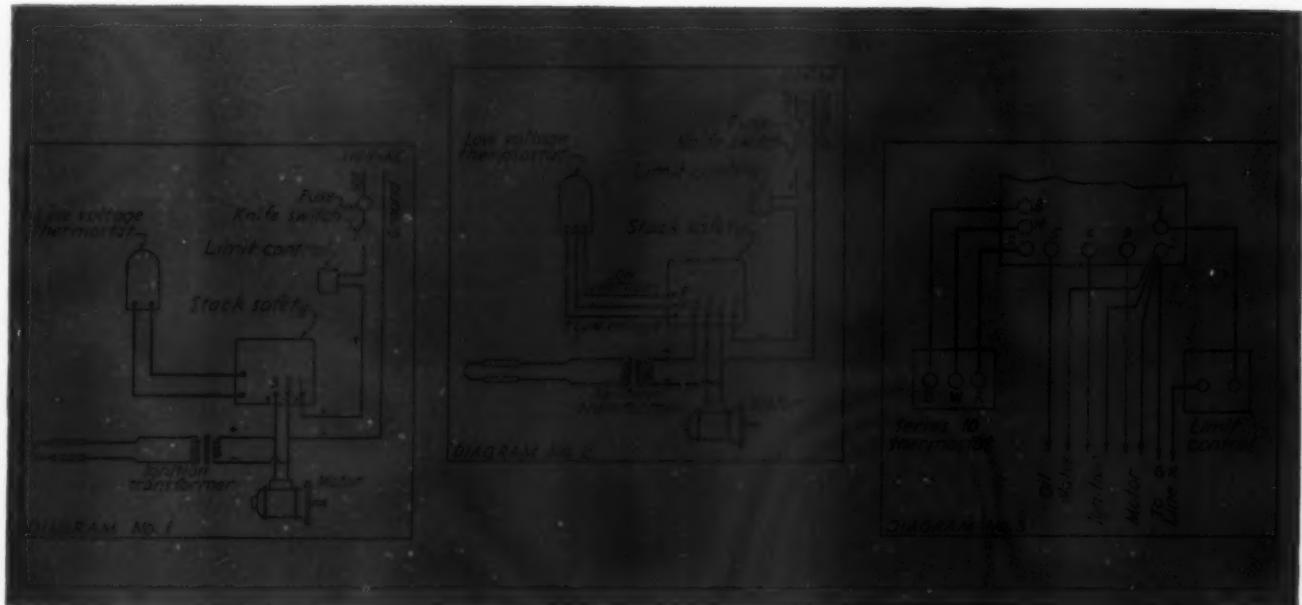
Moduflow furnishes comfortable floor level temperatures with low thermostat settings. Floor temperatures should be at least 68 degrees, especially in homes with children. It can be seen that a thermostat setting of 72 degrees gave a floor temperature of 68 degrees with the Moduflow system.

The conventional on-off system requires higher thermostat settings to maintain comfortable floor temperatures. It can be seen that a thermostat setting of 72 degrees will not maintain warm floors. To bring the floor temperature up to the comfort level, it was necessary to raise the thermostat setting several degrees.

From Chart No. 6, comparing bonnet temperatures of the two systems, it is clear that Moduflow maintains comfortable room temperatures with lower furnace temperatures. This means increased efficiencies and longer life of the furnace, convincing evidence that Moduflow cuts down the fuel bill and provides protection for the heating equipment.

But the real proving ground for any system of heating control is the occupied dwelling. The real worth of a system can best be judged by those who have *lived* with it.

Professor Konzo's second article in his series "The How, What and Why of the New Winter Air Conditioning Manual" has been delayed. It will appear in April. Watch for "How to Select Furnace Size"



# Essentials of Oil Burner Service

## Part II

Types of controls for oil burner systems—What stack switch does—Provision for purging—Stack switch troubles—Service man must possess varied knowledge.

By E. F. Fuller—E. F. Fuller Engineering Co.—Oconomowoc, Wisc.

**I**N GENERAL, controls for automatically operated oil burners consist of a series of switches, which open and close the various relays or circuits in accordance with the following:

- (a) High or low temperature limits in the space to be heated.
- (b) High or low temperature limits in the heater.
- (c) High or low pressure in the heater.

Controls for the most part are electrically operated and are available for use with frequencies of (25) cycles (40-60) volts and (60) cycles-110-220 volts.

When installing and checking systems, the service man should be familiar with these properties of the electric current and inspect to see that all controls are designed for the correct frequency and voltage for each oil burner installation.

There are many and varied combinations of controls and wiring systems, and it would be quite impossible to cover all of them in this article, however, one of the much used systems consists of an element designed for stack mounting, or a stack safety, a limit control on the heater, and a thermostat in the key room to be heated as per Diagram No. 1.

All controls in this system are designed to operate on line voltage, including the two wire thermostat. The ignition transformer is in parallel with the motor and remains in circuit for the entire period of the operation of the burner.

Another much used system consists of a stack relay, a three wire low voltage room thermostat and a

limit control on the heater, as shown in Diagram No. 2.

The primary control, or stack relay, in this hook up, contains the main oil burner motor control switch, intermittent ignition control switch, and stack safety cut off, or warp switch.

The part of the control placed in the stack, or in the line of travel of the hot combustion gases, in many controls consists of a bi-metal helical element attached to the shaft assembly, which performs the following functions:

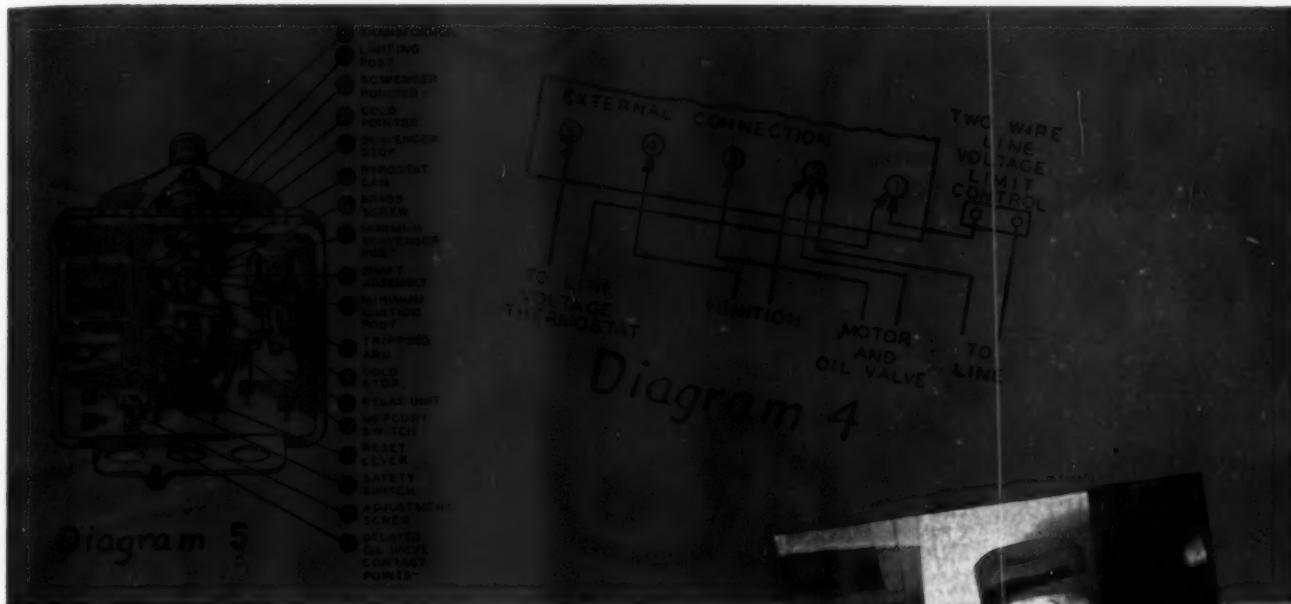
1—When the burner heats, the helical element rotates the shaft assembly until the intermittent ignition switch between terminal posts 1 and 4 (Diagram 2) opens, cutting off the ignition, and the burner continues operation until the room thermostat is satisfied, or the limit control switch cuts off the main hot line.

2—When the shaft assembly cools off after the burner stops, the ignition switch must return to the starting position.

3—In cold position, the shaft assembly should be inspected to make sure it automatically returns to the starting position.

In certain controls the above described functions are accomplished by a straight line action element, which operates on the shaft assembly, but does not rotate.

A low voltage transformer, usually placed on the back of the relay, reduces the line voltage to 25 volts, or less. This low voltage is used between the thermo-



stat and stack relay, or primary control, only.

When the thermostat calls for heat, the low voltage relay between thermostat and stack closes, energizing an electro magnet in the primary control, which closes the main oil burner switch between terminal posts 1 and 3 (Diagram 2), and starts the burner motor.

This type of control has a recycling feature, which after a period long enough to dispel any gases or oil, that might have been left in the combustion chamber, or fire box, as a result of the first cycle, will recycle the burner automatically, without a shut down, or attention from the home owner, giving the burner one more chance to purge the supply line of air, the nozzle of small particles of dirt, the heat to reach the shaft assembly in the main control, or overcome any other minor fault that may occur in the circuit. If the flame does not appear in the second cycle, the safety switch will stop the burner in about 90 seconds, and the control will have to be reset manually.

In most primary controls, the safety warp switch will cut off and lock out the relay coil current in 90 seconds after the first flame failure. Some control manufacturers make provision for the adjustment of the time limit periods governing the cut off in the field. To make these adjustments, refer to the manufacturers' service and installation manual.

#### Stack Switch Troubles

The most frequent cause of failure of stack mounted controls is accumulation of soot and dirt on the element that is placed inside the stack.

On a—NO HEAT CALL—when the lock switch is open, remove the stack relay, clean the helix, or straight line element, dust and clean all contacts, return to stack and reset warp switch.

If operation is still incomplete;

- (a) Check timing of warp switch.
- (b) Check starting position.
- (c) Check primary and secondary relays.

Should the operation still be incomplete, REVIEW CHECK LIST (Article 1—this series) and correct cause of burner failure, before leaving the job.

Some stack relays have a fifth terminal post to connect to, should it be necessary to use an oil valve in the supply line Diagram No. 3, or when a two wire low voltage thermostat is used, terminal post 5 is for



connection into the thermostat circuit, as shown in Diagram No. 4.

All control manufacturers make provision to prevent the automatic operation of the burner and guarantee complete safety in case any part of the controls fails to function properly.

Should the current in the supply line go off and come on again during the cycle of operation, the stack safety will recycle automatically and start the burner.

In most makes of controls, the main burner switch is operated by an electro magnet, controlled by the thermostat.

The secondary control switches may be of the mercury switch type, the single snap switch with contacts made of contact silver, or other non-corrosive metal, or the double contact snap action switch.

Most oil burner controls are quite satisfactory, however, some are destined to get out of order now and then, making it necessary to replace parts, or an entire control.

In as much as it is practically impossible for the average service man to stock a complete line of parts

(Continued on Page 145)

# Proposed Simplified Practice Recommendation

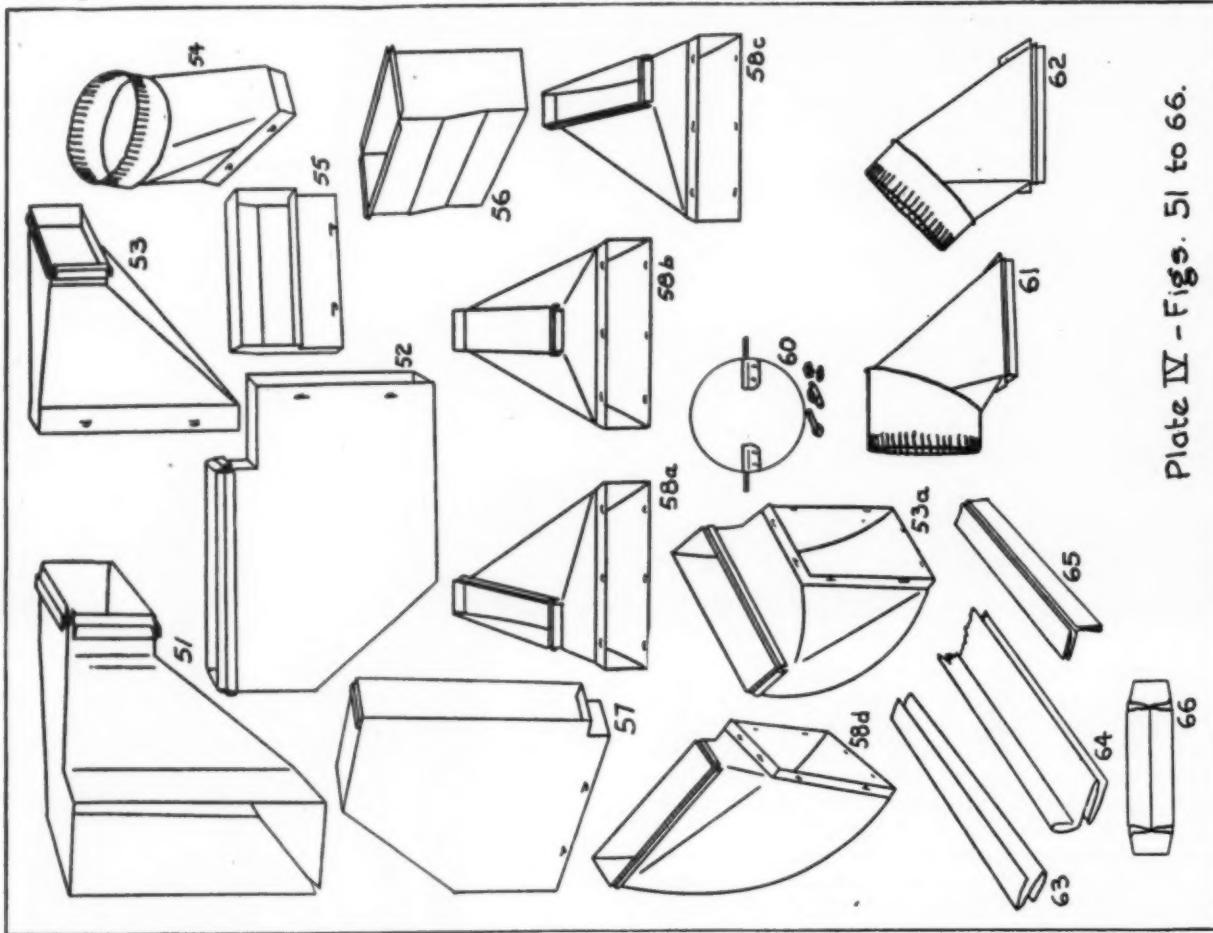


Plate IV - Figs. 51 to 66.

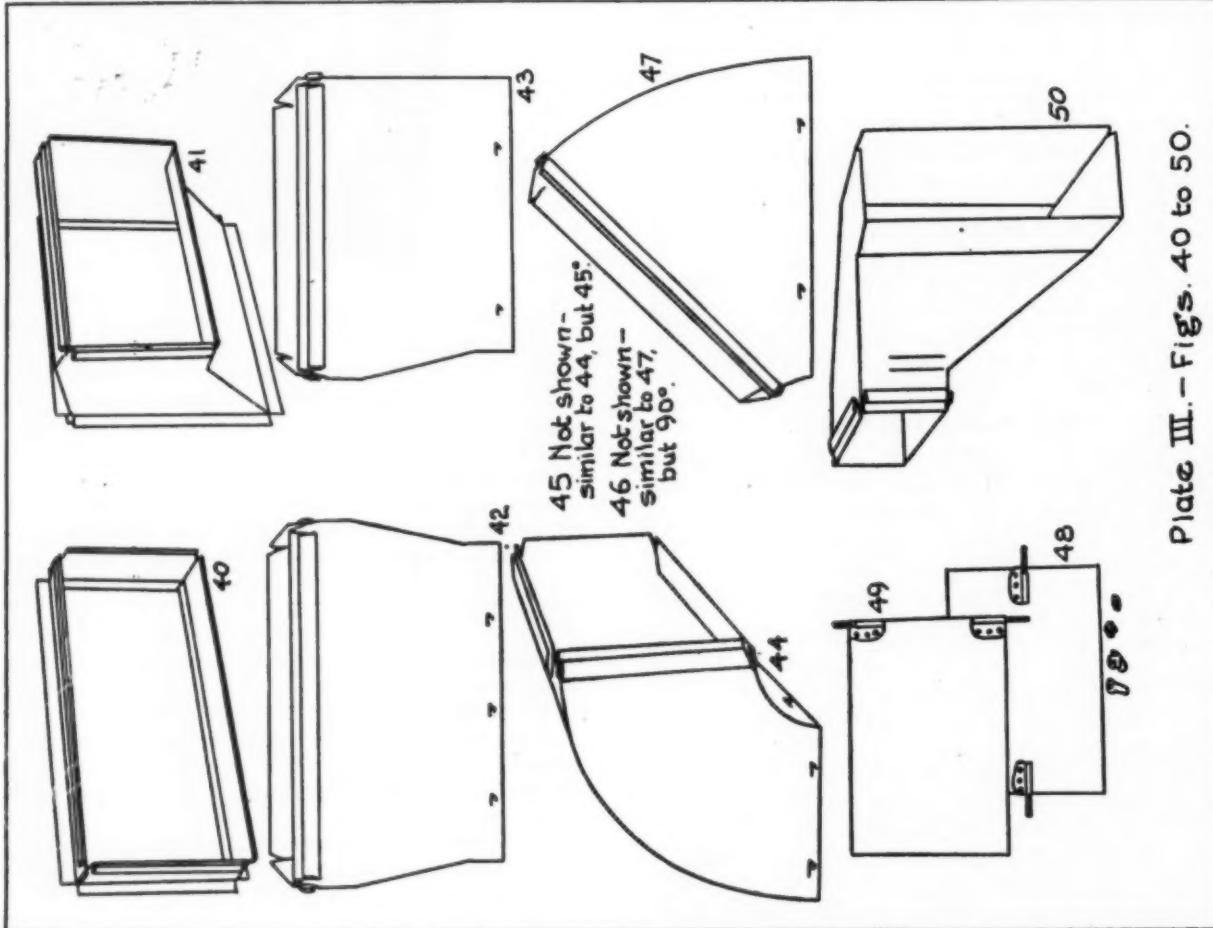


Plate III. - Figs. 40 to 50.

# For Pipes, Ducts and Fittings\* [Part 3]

Table 10

## Duct, Stack and Fittings

(All ducts and duct fittings to be of 26 gage galvanized iron. All stack and stack fittings to be of 28 or 30 gage galvanized iron, but not both.)

| Item  | Fig. No. | Sizes, in inches   |  |
|---|----------|--|--|
| Plenum chambers .....   | 39       | Heights: 12, 18, 24, 30, 36, 42, and 48                        |  |
| Rectangular duct and duct fittings:   |          |  |  |
| Rectangular duct in 16-, 32-, and 64-inch lengths .....                     | 22       |  |  |
| Takeoff collars .....   | 40       |  |  |
| Offset starting collars .....   | 41       |  |  |
| Duct heads .....  | 23       |  |  |
| Increaser sections:   |          |  |  |
| For two branch lines .....  | 42       |  |  |
| For one branch line .....   | 43       |  |  |
| Trunk elbows:   |          |  |  |
| 90° shortway .....  | 44       |  |  |
| 45° shortway .....  | 45       |  |  |
| 90° longway .....   | 46       |  |  |
| Trunk angles, 45° longway .....   | 47       |  |  |
| Volume dampers .....  | 48       |  |  |
| Splitter dampers .....  | 49       |  |  |
| Branch connections:   |          |  |  |
| Side takeoffs, left .....   | 50       |  |  |
| Side takeoffs, right .....  | 51       |  |  |
| Top takeoffs, left .....  | 52       |  |  |
| Top takeoffs, right .....   | 52       |  |  |
| Transition sections .....   | 53       |  |  |
| Transition elbows .....   | 53a      |  |  |
| Transformers .....  | 54       | Ending in collar sizes, 6, 7, and 8                            |  |
| Wall stack and stack fittings:  |          |  |  |
| Wall stack .....  | 22       | Lengths: 6 to 96, inclusive; sizes: * x 10, * x 12 and * x 14. |  |
| Stackheads, horizontal, for one sidewall or baseboard register .....        | 55       | Stack size   | Register size                                |
|   |          | * x 10 .....   | 10 x 4<br>10 x 5<br>10 x 6                   |
|   |          | * x 12 .....   | 12 x 4<br>12 x 5<br>12 x 6                   |
|   |          | * x 14 .....   | 14 x 4<br>14 x 5<br>14 x 6                   |
| Stackheads, for floor registers .....                                       | 56       | * x 10 .....   | 10 x 4<br>10 x 6<br>10 x 8                   |
|   |          | * x 12 .....   | 12 x 4<br>12 x 6<br>12 x 8                   |
|   |          | * x 14 .....   | 14 x 4<br>14 x 6<br>14 x 8                   |
| Stack boots:  |          | Round collar size  |  |
| Universal .....   | 24       | * x 10 .....   | 6  |
| 45° angle .....   | 26       | * x 12 .....   | 7  |
| 90° angle .....   | 27       | * x 14 .....   | 8  |
| Center-end boot .....   | 28       |  |  |
| Stack elbows and angles:  |          |  |  |
| 90° elbow, shortway:  |          |  |  |
| Round throat .....  | 44       |  |  |
| Square throat .....   | 33       |  |  |
| 45° angle, shortway .....   | 34       | * x 10 .....   |  |
| 90° angle, longway .....  | 57       | * x 12 .....   |  |
| 45° angle, longway .....  | 35       | * x 14 .....   |  |
| Reverse stack elbows:   |          |  |  |
| Left .....  | 58a      | * x 10 .....   |  |
| Center .....  | 58b      | * x 12 .....   |  |
| Right .....   | 58c      | * x 14 .....   |  |
| Reverse transition elbow (inlet to match manufacturer's branch sizes) ..... | 58d      | Stack size   |  |
| Miscellaneous fittings:   |          |  |  |
| Volume dampers .....  | 48       | * x 10 .....   |  |
| Splitter dampers .....  | 49       | * x 12 .....   |  |
| Top collars .....   | 6        | * x 14 .....   |  |
| Stub collars .....  | 7        |  |  |
| Quadrant dampers .....  | 60       |  | Diameters: 6, 7, and 8                       |
| Boot reducers, round .....  | 20       |  |  |
| Air conditioning side rail .....  | 16       |  | Sizes: 8 to 7 and 7 to 6<br>Widths: 8 and 10 |
| Takeoffs, square to round:  |          |  |  |
| Top takeoffs .....  | 61       |  |  |
| Side takeoffs .....   | 62       |  | Collar diameters: 6, 7, and 8                |
| "S" hooks:  |          |  |  |
| Single .....  | 63       | Length: 60 .....   |  |
| Rigid .....   | 64       | Length: 60 .....   |  |
| Angle .....   | 65       | Length: 60 .....   |  |
| Connecting cleats .....   | 66       | Lengths: 8 and 10 .....  |  |

\*Branch connections may end either in stack connection sizes shown, or in sizes of manufacturer's branch outlets. Branch outlets may be made integral with trunk fittings.

\*Denotes depth of stack and stack fittings. The depth may be 3 in., 3 1/4 in. or 3 1/2 in., but it is recommended that no producer or distributor stock pipe and fittings in more than one of these depths.

# What Is An "Oversized" Piping System?

## Will an "Oversized" System Circulate Properly?

A READER presents the following problems and questions relating to a gravity furnace installation which occurs quite frequently in remodeling projects. He said:

"With the warm air ducts *oversized* for the requirements of the house and the available return air just equal to the *required* warm air, would you consider the system in balance and capable of proper circulation?

"The house in question calls for 247 square inches of warm air leader pipe area on the first floor and there are 284 inches actually installed. The second floor calls for 160 square inches of leader pipe area and has 256 square inches actually installed. The total return air free area is 408 square inches. Thus the return air area just equals the area of warm air leader pipe required, but is smaller than the leader pipe area actually in the basement.

"The contention in this case is that with the return air of correct and sufficient capacity for the house there is no detriment from oversized leader pipe. What is your opinion?"

American Artisan expressed an opinion and also sent the question to Professor Konzo who replied as follows:

"So seldom do we find a case in which the second story leader area is greater than Code requirements that it is a pleasure to discuss this 'rare species.' As a matter of fact 'leader area' alone does not tell the whole story. To boil the problem down to the simplest terms, the discrepancy between 247 and 284 for first story runs is so small that it offers no problem. The question finally comes down to: 'is it permissible to oversize the leaders on the second story?' That question in turn prompts another, which is: 'what is an oversized warm air run?' This simple question is the key to the whole problem.

"In your example the second floor requirements call for a leader area of 160 sq. in. The Gravity Standard Code stipulates that the stack area should be at least 0.7 of 160 or 112 sq. in. If you have the leader area exceeding 160 sq. in. (which you have) and *at the same time* the stack area *exceeds* 112 sq. in., then and then only can the warm air side be considered oversize. Very often we find a case in which the stack size will be 112 sq. in. and the leader area *alone* is oversized. Under these conditions the warm air run cannot be considered oversize. The stack is the 'bottleneck' and merely adding larger leader pipes to a fixed stack will not create much of an increase in capacity.

"On the assumption that in your given problem the leader area installed is 256 sq. in. and the stack area installed is 0.7 of 256 or 179 sq. in., we can proceed to discuss the limitations. In Bulletin 246, page 155, appears the statement: 'If the connected leader

pipe area for a given furnace is increased the plant will deliver approximately the same capacity in Btu hour at the bonnet for given combustion rates, but will do so at reduced register air temperatures. The safe limit for the ratio of connected leader pipe area to free area through the casing is approximately one to one for a plant with very low resistance in the cold-air return."

"In Bulletin 188, page 35, appears the statement that 'when the ratio of leader pipe area to free area through the casing is increased much above one to one, the plant may breathe, or some one of the warm-air pipes may act as a cold-air duct.'

"In general, within the limits expressed in the last two paragraphs, oversizing of the warm air ducts will do no harm and is far more preferable than the majority of cases in which the stacks to the second story are undersized."

S. Konzo,  
Special Research Professor,  
Engineering Experiment Station,  
University of Illinois.

American Artisan said of the problem:

"Roughly, we would not consider the system 'in balance,' based on the fact that the standard code recommends return air equal to or not less than ten per cent decrease by area from the warm air supply area. As to whether or not this system is capable of proper circulation, Bulletins 112 and 141 show that when all pipes are uniformly over-sized, the system may be quite capable of proper circulation, but we should expect lower register air temperatures. Since furnaces are rated on the basis of 175 deg. register temperature and since your warm air leaders are approximately 33 1/3 per cent oversize, we probably could expect equal circulation in all rooms, but instead of 175 deg. R. T., perhaps 150 deg.

"Perhaps the above paragraph should be qualified by asking what is the area of the stacks to the second floor? The Research Residence has said many times that the stacks are the bottle neck to the system to second floor registers. If these stacks are sized at approximately 70 per cent of the warm air leader pipe area *actually* installed, then again the system is likely in balance, but operating at a lower temperature. If, however, these stacks are sized at 70 per cent of the *required* warm air leader pipe area, then your stack area will control your air volume and your register temperature without regard to the warm air leader pipe serving these stacks.

"So far as the first floor is concerned, your difference between 247 sq. in. and 284 sq. in. does not seem to be serious, assuming that there is at least four warm air pipes to the first floor."

AMERICAN ARTISAN.

AMERICAN ARTISAN

# SHEET METAL SECTION



DEVOTED TO SHEET METAL CONTRACTING AND FABRICATING



**STEEL**  
AT YOUR SERVICE  
**STEEL**

## **NOT IN OUR PLACE**

Our feet are either *under our desks* or *under your desk*—or out in *our warehouse* or *your shop*. We do a lot of *footwork plus* a lot of *headwork* in order to give you the kind of prompt and intelligent service you deserve. ★ We carry large steel stocks, including *Stainless Steel*—and will be glad to help you solve any specific steel buying or fabricating problem. Call us. We answer our phones promptly and talk business.

**CHICAGO STEEL SERVICE COMPANY**

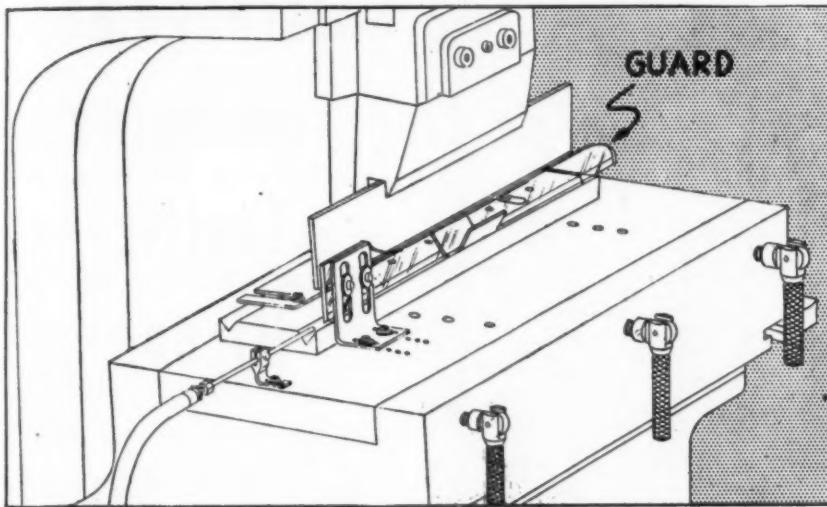
*"The House of Stainless"*

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# The Idea Exchange

Production ideas others have found useful. Your ideas are invited. Illustrate if possible.

## Punch Press Guard



THE guard shown in the accompanying illustration is designed for the protection of fingers in flanging and angle-forming operations. As illustrated, this guard is adjusted on the bracket allowing just room for the part to be placed under the guard. The side toward the operator is beveled so that the part being formed will not strike the guard. On the upward stroke the air ejector blows the part from under the guard into a receptacle.

Originally this knife-shaped guard was made of metal, and there was some opposition because the operator could not see the work. It was then improved by using plexiglas which is transparent. The plexiglas had been rejected for other purposes and was headed for the scrap pile.

With the guard in use, it is impossible to place the finger beneath the die. This simple and inexpensive device has, it is claimed, increased production 50 per cent and for the past several months has eliminated all injuries of this nature.

Elmer Root, set-up man in the punch press department of the Boeing Aircraft Company, Seattle, Wash., is the inventor of this guard.

*Industrial Safety Review,*  
Jan., '44

the use of grooves in a standard six-foot bending roll. The grooved rolls were devised by members of the company's welded products section. In combination with the use of spot welding instead of arc welding, they have reduced the time required to produce such products as end shields, ventilating hoods, and covers for motor-generators and turbines.

The spacing of the grooves provide certain combinations of channel and "Z" sections. Flat sheets are sheared to proper length and developed width, and the edges are then bent in a standard bending brake to form either a channel or "Z." Next, the two ends of the piece are formed in a brake to the contour of the desired part. Then the piece is inserted into the grooves of the roll, and by applying pressure to the top roll the section is rolled to the desired contour. This rolled section takes the place of a "Z" section formerly made from either two or three pieces arc welded together.

The rolled section is then routed to a spot welder where it is spot welded to flat side sheets. The use of spot welding produces neater work in less time and at lower cost.

## Grooved Bending Roll

SHEET metal operations have been speeded up at General Electric's Schenectady Works through



# Inexpensive Rearrangement Eliminates Traffic Mixups

By Ernest E. Zideck  
Sheet Metal Consulting Engineer

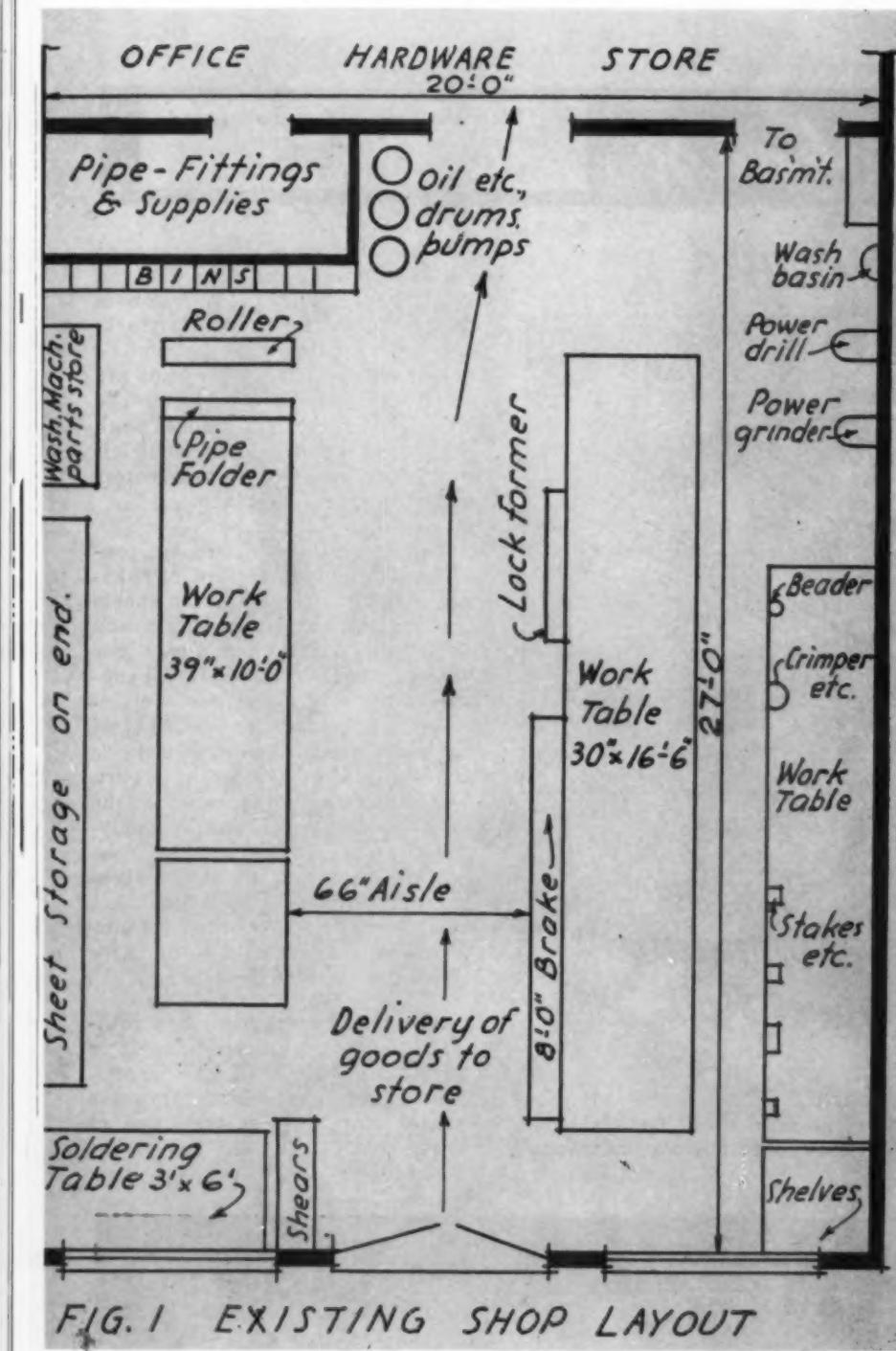


FIG. 1 EXISTING SHOP LAYOUT

IN FIG. 1 is reproduced an existing sheet metal shop in which 85 per cent of all work done in normal times consists of "forced air" furnace work and the 15 per cent remaining is repair of farm equipment, as cans, pails, washing machines and some pipe fitting. The shop also installs stokers and oil burners. Some trunk work and fittings for the furnace installations are made here, but some duct work is purchased prefabricated, and all of it is prepared for installation by means as shown in the drawing.

The shop is 20x27 feet floor space, with 11 feet high ceiling. Fronting the shop is the office and the store. Solid walls with no windows rise on the sides of the shop. The rear of the building has two windows into the shop, each 6 feet wide by 9½ feet in height. In the center, between the windows, is a double door 6 feet in width by 8 feet high. Through this door is

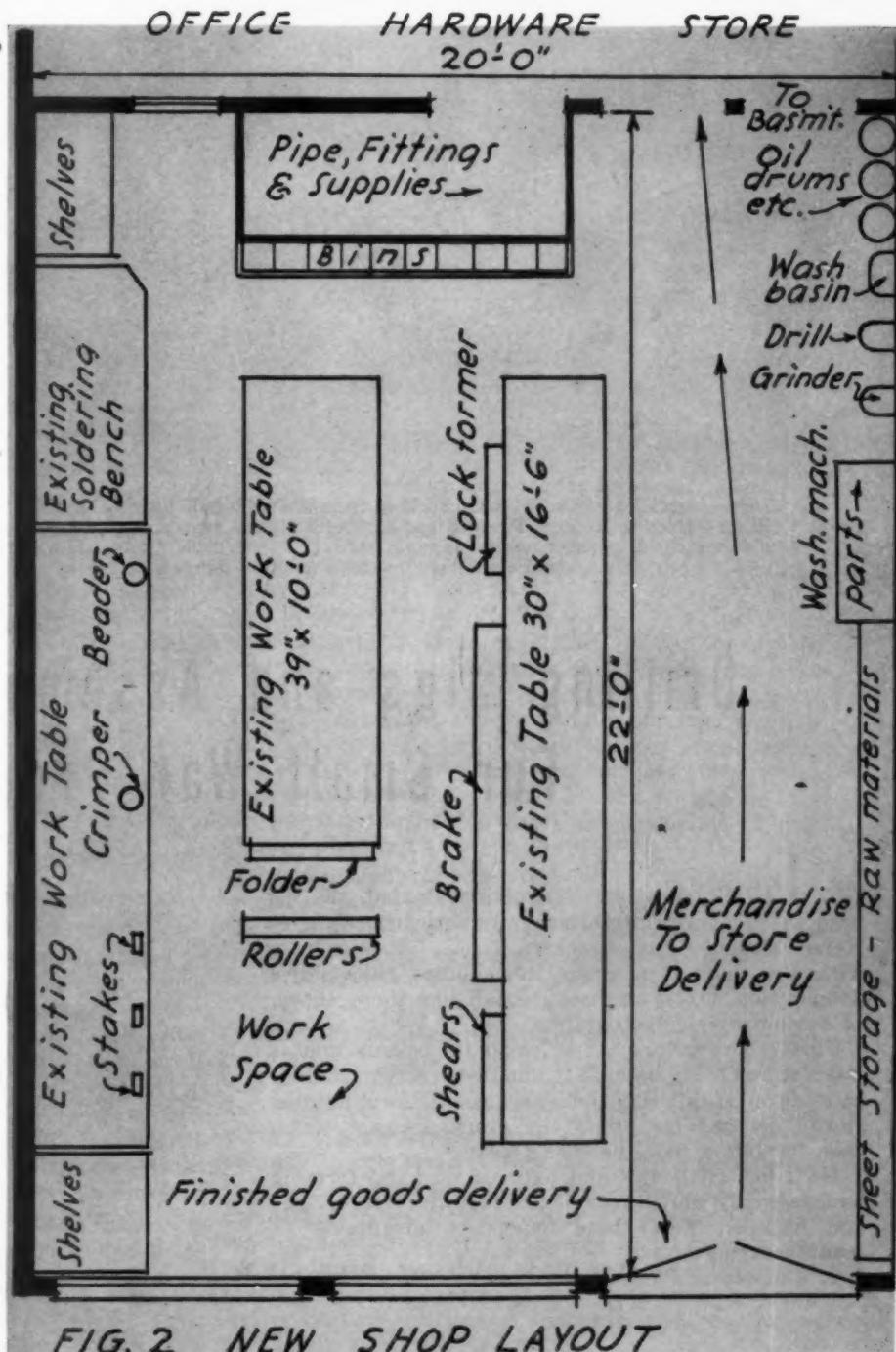
brought in all the merchandise for the store in the front of the building. It is the only entrance for materials and exit for goods made in the shop. Fig. 1 shows that the 66 inch wide aisle serving for delivery of merchandise to the store also provides work space for the 8-foot brake and a lockformer. Work on these machines would be interfered with whenever a delivery takes place or finished goods are moved in the shop for transportation through the 6-foot wide, centrally located door, to the outside. Also, any furnaces or other such large units on which work must be done would most probably crowd the aisle.

In order to facilitate the movement through the shop of the merchandise, of delivery and storage of sheets and raw materials, and of providing a space for the work being done, neither of which would interfere with the work in progress, we have redesigned the shop layout as shown in Fig. 2. Here the right hand, 6-foot window has been converted into the 6-foot wide door, and vice versa, the former door has been converted into a window. A new door has been provided leading into the store. The window shown in the office partition at the left can be put in, or not, but this window is useful in that the office occupant

**With his store in front and delivery from the rear so that all merchandise had to pass through the shop, this reader's problem was delays in shop work. The rearrangement provides plenty of work space and routes the traffic through storage space.**

can talk to the man doing repair work on the soldering bench, can hand in or receive small items through the window, and generally communicate with the men in the shop without leaving his office. This window might be a door provided with glass.

It will be noted by looking at Fig. 2 that the incoming sheets and raw materials are stored immediately next to the delivery door to minimize traffic. There is no machine and no work interfered with by the movement of merchandise to the store or of finished goods to the outside, and there is an ample space provided near the window for any furnace or other unit on which work is in progress. Nothing has been eliminated from the equipment shown in Fig. 1. But an 8-foot shear can be added. The pipe, fittings and supplies store has been moved to the right so as to utilize the existing door from the store to lead into the pipe, fittings and supplies store. The soldering bench has been moved to the front. And although fumes from the acids might be considered a drawback in the new location, it can be safely said that in a shop 20x27 feet the fumes will reach to all corners of the shop, no matter where the soldering is done. The three benches shown in Fig. 1 are all utilized in the new layout in Fig. 2, with the two windows

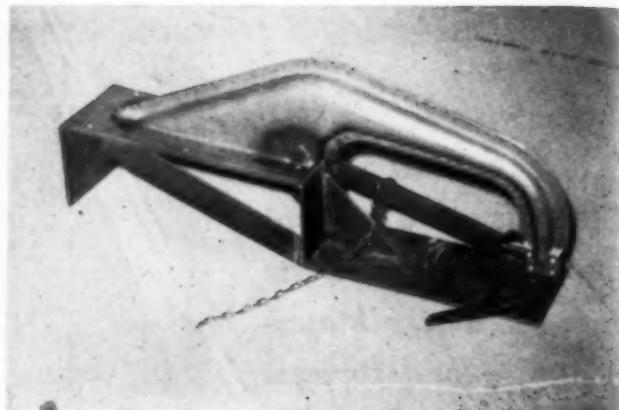
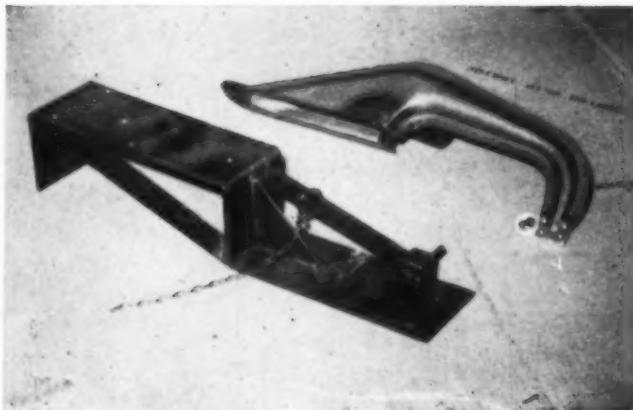


**FIG. 2 NEW SHOP LAYOUT**

shedding their light directly over them and over the machines.

The sheets, stored "on end," at the right of the door need only be moved across the aisle to the table adjoining the shears. The sheared parts then are moved along the table to the brake or to the lockformer, or rollers, as needed. The 30-inch shears can be located anywhere if 8-foot shears are procured. And the two centrally located benches need not be positioned as shown. The most practical arrangement of them and of the "movable" machinery is recommended.

The new layout of the shop as per Fig. 2 provides a clear space for the movement of merchandise to the store, of materials for storage, and of finished goods to the door. This has been accomplished by the not too elaborate or expensive alterations in the rear of the building and in the partition separating the shop from the office and the store.



Left—Aircraft part (horn) and checking fixture. Note ball bearing and its bracket riveted to end of horn. Right—Horn in fixture. Flanged end of "bell" fits on two pins; then key must go through ball bearing. Further check consists of passing pin through eight drilled holes. Horn made of two identical halves (left and right) spot welded through flanges. H&G made this fixture.

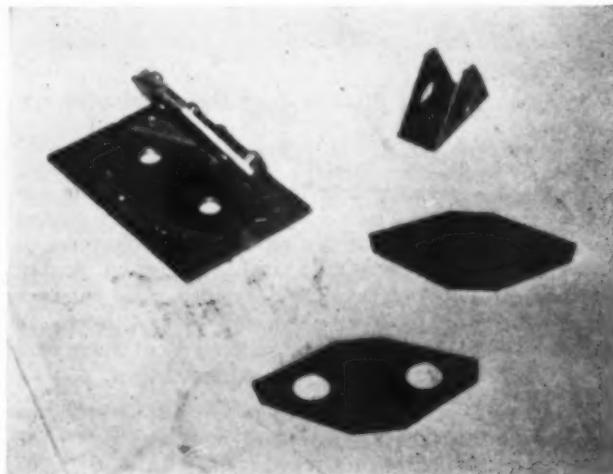
## Drilling Jigs and Assembly Fixtures For Small War Products

EVER since sub-contracting started, the old time sheet metal contracting and fabricating firm of Herrmann and Grace, Brooklyn, N. Y., has been busy with a variety of products, some large (like ship's ammunition boxes) and some small like those shown in accompanying photographs.

This report covers a few small items only and is interesting chiefly because it illustrates a typical H&G attitude on costs. H&G believes that dies and fixtures should be used for practically every contract which calls for 100 or more finished pieces.

H&G has tried dies and fixtures vs. hand forming and assembly and is convinced that the use of dies and fixtures offers these important advantages in manufacturing:

1. Cuts costs about one-half.



Drilling jig made by H&G. Sheared blank (right, center) placed inside stop strips. Jig leaf is then lowered and two holes are drilled (lower piece); holes are then enlarged. Two flanges are then formed (upper, right).

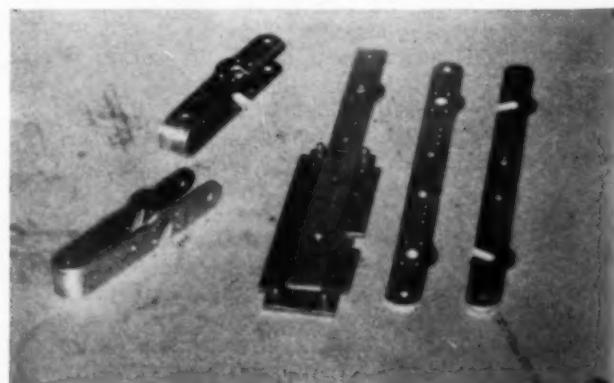
2. Greatly speeds up production.

3. Increases accuracy, thereby reducing rejections.

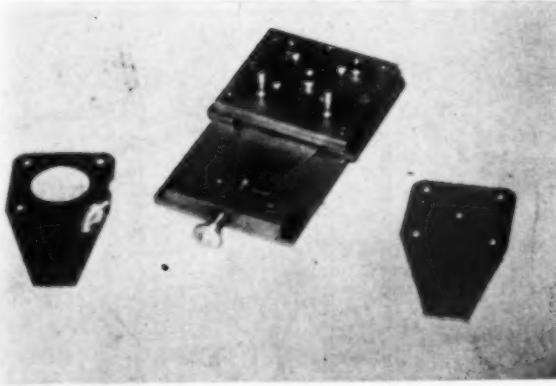
Typical die and fixture costs on several of the items shown average about \$65.00. Using such dies and assembly fixtures, a typical cost saving would be 6 cents per piece as compared to 12 cents for hand forming and hand assembly.

The problem, of course, is to determine when dies and fixtures are warranted and when they are not. H&G has found that this problem is decided in some cases—especially fabrication of airplane parts by the government—dies and fixtures are specified.

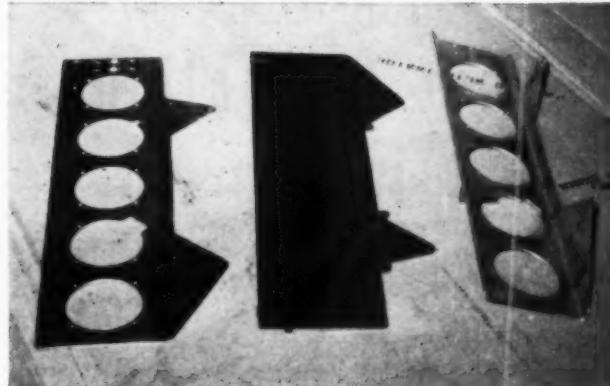
In H&G's experience there is another factor—some small airplane pieces are purchased in enormous quantities.



One-half a drilling jig—other half identical. Strip, in flat, positioned in jig against stop strips, then upper half placed on pins shown and nine holes are drilled. Then strip is reversed and nine identical holes are drilled in other end. Center strip shows all 18 holes drilled. Then two notches shown in right strip are cut in band saw. Next, strip is folded in press brake. Spacing between legs must be .005; spacing between holes .005 in. Final check consists of testing parallel-ness with spirit level and facing holes by running pins through legs.



Jig made by H&G to drill four small holes and one center centering hole which is later cut to final large diameter. Sheared blank is slipped into jig from back and placed against positioning pin. Then brass screw (looks like a knob) is run down to hold blank. Lower left hole drilled first and pin run in. Then lower right hole is drilled and pinned. Then two top holes are drilled. Tolerance between holes .005. Left—finished piece. Right—drilled piece.



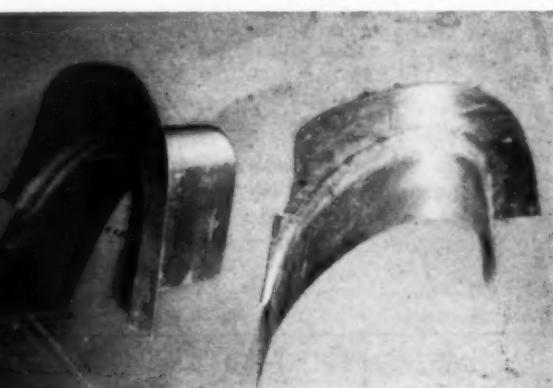
In center is a drilling template for an instrument panel of .064 aluminum. Drill size of each hole is scratched on template. At left is piece after holes are drilled and five centering holes have been cut out to final diameter with a band saw. At right is finished piece with the edge flanged.

parts ordered in large quantities are quite apt to be given to some other producer on follow-up orders because newcomers are given to bidding too cheap. There is, therefore, the perpetual problem of whether or not there will be a re-order. Because of this situation, the biggest problem is to find new items which need manufacture to replace contracts lost or discarded and the list of items in production is constantly changing.

Finally, many of the items required are already tagged with a very low price. To be offered such an order is pretty good evidence that the former producer can't make any money and wants to turn the contract loose. The thing to do then is avoid such contracts.

Many of the dies and fixtures shown in the pictures were made in H&G's well equipped shop, using material from stock, even scrap, but where the tolerances are very exact, purchased dies and fixtures, even though they cost more than shop-made, pay for themselves if the die and fixture maker knows his business.

Construction of the dies calls for knowledge of machine shop operations and careful workmanship, but construction of suitable assembly and checking fixtures is much more complicated and requires real ingenuity—first, to determine just what must be exact and what can have some tolerance, and, second, to devise a fixture which can be filled and emptied quickly. The explanations under the photos indicate that H&G fixtures really meet these specifications.



This piece is the leading edge of an airplane wing where the wing joins the fuselage. The edge proper is made from a band of aluminum formed in the press. The junction piece is formed by hand over a wood block. Then the two pieces are gas welded together and final shape is made by hand peening over a wood form.

### Steel Situation Acute

**I**N ORDER to meet the critical steel situation which exists at the present time, the War Production Board has appointed an emergency committee on steel problems. This committee is expected to review the entire steel supply and demand situation for the second and succeeding quarters of this year, with a view to making recommendations to assure that all essential requirements for the metal will be met.

WPB states January steel production was 350,000 tons less than expectations due to weather conditions, the fuel shortage, and other problems and that sharp revi-

sions in military procurement schedules resulted in the issuance of special directives to many steel mills, causing some sharp dislocations of production schedules.

As for second quarter allotments of steel, the carry-over of requirements from the first to the second quarter of this year will be about three million tons, with the result that allotments have been sharply reduced for the latter period. It is feared that some important military requirements for the second quarter will not be met unless production can be increased over present levels.

# Dust Collection in the Foundry\*

By S. D. Moxley

## Part 2

THE cloth screen filter which has found wide application in the collection of foundry dust has characteristics shown under Style G, Table 1 (Fig. 4). Where it is necessary to collect the extreme fines, and where the dust concentration per cu. ft. of air is not high, this type of equipment has proved most efficient. The limitations of this apparatus are usually found in the amount of moisture in the air, the temperature, the nature of the dust, and the dust concentration of the air stream.

Where high concentrations are combined with relatively high percentage of very fine particles, and where the particles themselves are composed of clay or other sticky substance with moisture included, the shaking mechanism is usually found inadequate to clean the cloth screen. This shaking is usually done by mechanically operated rappers, and the air must be cut off during

\*Paper presented before American Foundrymen's Ass'n Convention.

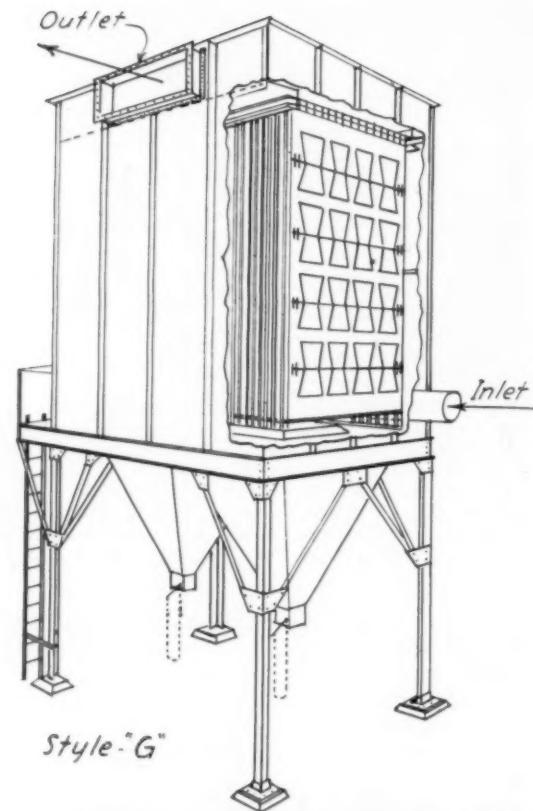


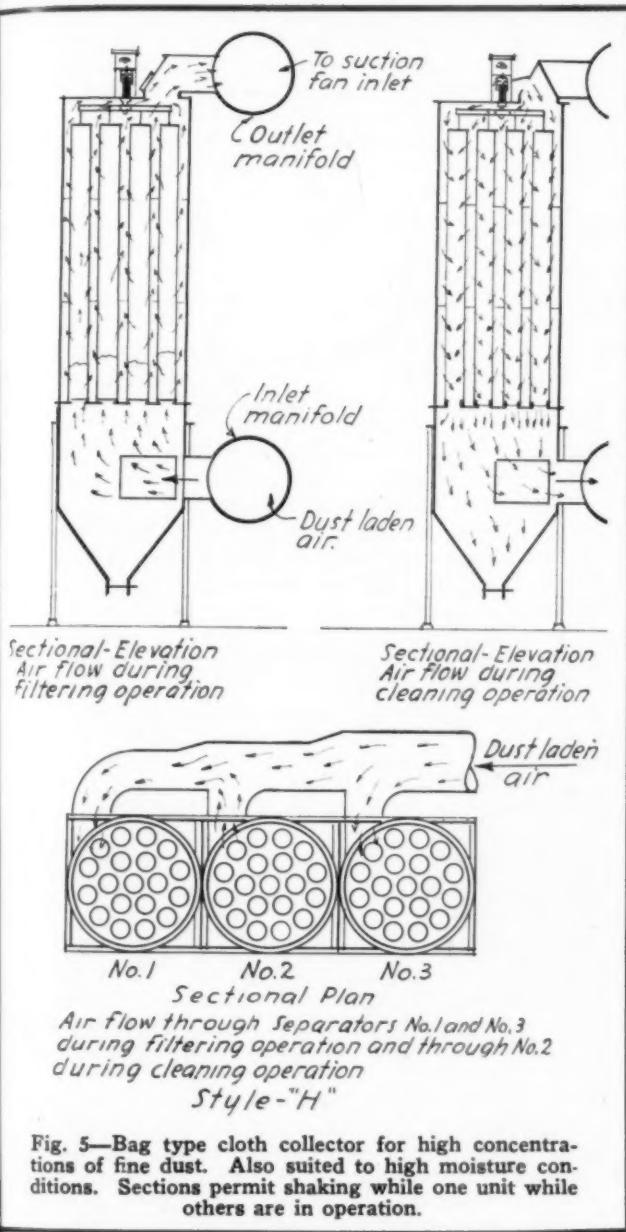
Fig. 4—One type of cloth screen filter capable of collecting extreme fines in low dust concentrations. Other types better for high dust concentrations.

ing the rapping operation. Practically any size material can be collected efficiently by this type of apparatus if it is provided with an expansion chamber or balloon type manifold which will first settle out of the air stream the larger particles.

Table 1  
DUST COLLECTOR CHARACTERISTICS

| Type                          | Style*  | Vol. Air<br>Per Sq. Ft.<br>Cloth               | Min.<br>Grain<br>Size<br>Microns | Temperature<br>Limits             | Moisture<br>Limits       | Maximum<br>Dust Con-<br>centration<br>Inlet Grs.<br>Cu. Ft. | Concentration<br>Outlet<br>5 Grs.<br>Cu. Ft. | Efficiency<br>5 Grs.<br>Conc. | Relative<br>Cost 15,000<br>Cu. Ft. Unit |
|-------------------------------|---------|--|----------------------------------|-----------------------------------|--------------------------|---|--|-------------------------------|---|
| Centrifugal Collectors.....   | A ..... | 70-75  |                                  | 800° F                            | Dewpoint                 | Any   | .75  | 85%                           | \$ 750                                  |
|                               | B ..... | 70-75  |                                  | 800° F                            | Dewpoint                 | Any   | .75  | 85%                           | 1,000                                   |
|                               | C ..... | 50-60  |                                  | 850° F                            | Dewpoint                 | Any   | .50  | 90%                           | 2,000                                   |
|                               | D ..... | 35-40  |                                  | 800° F                            | Dewpoint                 | Any   | .25<br>to<br>.10                             | 95%<br>to<br>98%              | 2,500                                   |
|                               | E ..... | 35-40  |                                  | 1800° F                           | Dewpoint                 | Any   | .25<br>to<br>.10                             | 95%<br>to<br>98%              | 3,000                                   |
|                               | F ..... | 25-30  |                                  | 750° F                            | Dewpoint                 | 150   | .50  | 90%                           | 2,000                                   |
| Centrifugal Fan Type.....     | F ..... |  |                                  |                                   |                          |   |  |                               |   |
| Cloth Screen.....             | G       | 2 Cu. Ft.<br>10 Gr.<br>3 Cu. Ft.<br>5 Gr.      | 5-10                             | 200° F<br>Above<br>Dewpoint       |                          | 10  | .05<br>to<br>.025                            | 99%<br>to<br>99.5%            | 4,000                                   |
| Cloth Bag.....                | H       | 4 Cu. Ft.<br>10 Gr.<br>6-8 Cu. Ft.<br>at 5 Gr. | 5-10                             | Cotton 200°<br>Wool 250°<br>Fahr. | 20°<br>Above<br>Dewpoint | 20  | .05<br>to<br>.025                            | 99%<br>to<br>99.5%            | 6,000                                   |
| Electrical Precipitation..... | I ..... |  | Any<br>Suspended<br>Particle     | None                              | None                     | Any   | .....  | .....                         | 10,000                                  |
| Washer.....                   | J ..... |  | 5-10                             | Boiling Point<br>of Liquid        | None                     | .....   | .....  | .....                         | 4,000                                   |
| Oil Flotation.....            | K ..... |  | 5-10                             | Boiling Point<br>of Liquid        | None                     | 25  | .017<br>and up                               | 99.7%                         | 4,500                                   |

\*For detail sketches or illustrations of apparatus of these styles, see Figs. 1, 3, 4, 5, 6, 7 and 8.



## **Electrical Precipitation**

Another type of dust collecting equipment which may require consideration in the collection of foundry dust is the electrical precipitator. Characteristics of this equipment are given in Table 1. The principle of operation is to pass the dust laden air through a strong electrostatic field where the dust particles are ionized. In this condition they will be attracted by the electrodes of opposite polarity.

The efficiency of this type apparatus on fine particles can be very high if the equipment is designed properly. The writer does not know of an installation of this kind being used for the collection of foundry dust. The reason it has not been used in this field, probably, is the high initial cost of the equipment. With the rapid improvements now being made, this disadvantage may shortly be overcome.

Style J (Fig. 7) shows an adaptation of the wet dust collector principle which has recently been applied to the collection of foundry dust. The dust laden air is introduced at the bottom of the tower tangentially. Water or other absorbing liquid enters the top of the tower and falls in a spray through succeeding plates, making contact with the upward moving dust laden air. Vanes are mounted on the bottom of the center plates which cause the air to travel upward in a spiral course. There are two washes per plate and usually six plates or twelve washes are used.

The collected material is absorbed in the liquid and flows by gravity from the bottom of the tower into settling tanks. The water from these tanks is recirculated in the tower and the sediment is disposed of by the most convenient means.

In Table 1 there are given reported characteristics of a collector of this type (Style J). The claims made for this equipment are beyond the performance of the

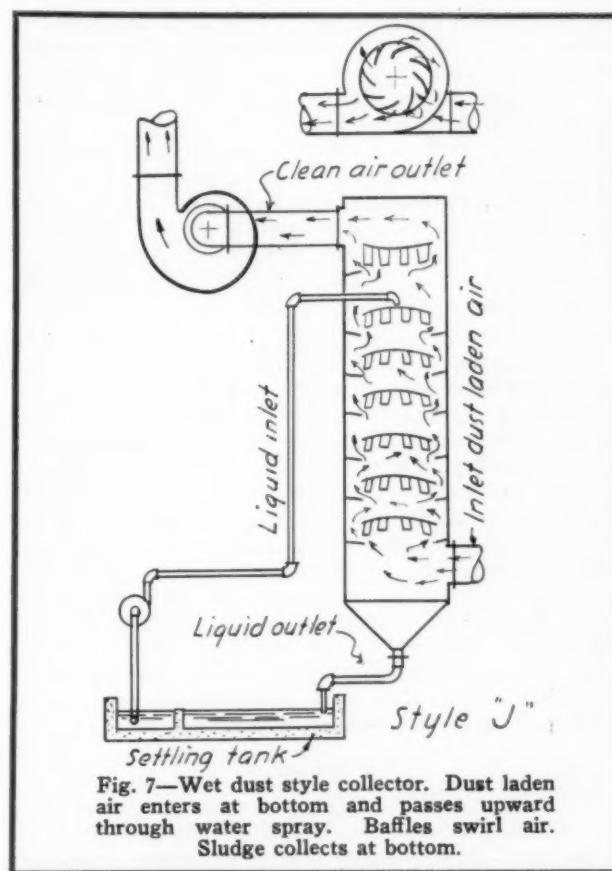


Fig. 7.—Wet dust style collector. Dust laden air enters at bottom and passes upward through water spray. Baffles swirl air. Sludge collects at bottom.

### **Cloth Bag Collectors**

For the higher concentrations of dust and the greater percentages of impalpable fines the bag type cloth filter of Style H, Table 1 and Fig. 5, has been found more satisfactory. It is also more effective on relatively high moisture conditions. The reason for this is that the bag type collector has a much more effective shaking mechanism. The collecting unit is divided into compartments, each containing from 15 to 18 bags suspended on a rack which is shaken by pneumatic equipment. During the shaking period the compartment is disconnected from the fan and the direction of the air is reversed. The compartment is then automatically cut into service while another compartment is disconnected for shaking. By this arrangement only a small part of the capacity of the collector is removed from service during the shaking operation. Large amounts of moisture can be handled by the bag type collector with little difficulty if the temperature of the air is kept some 20 degrees Fahr. above the dew point.

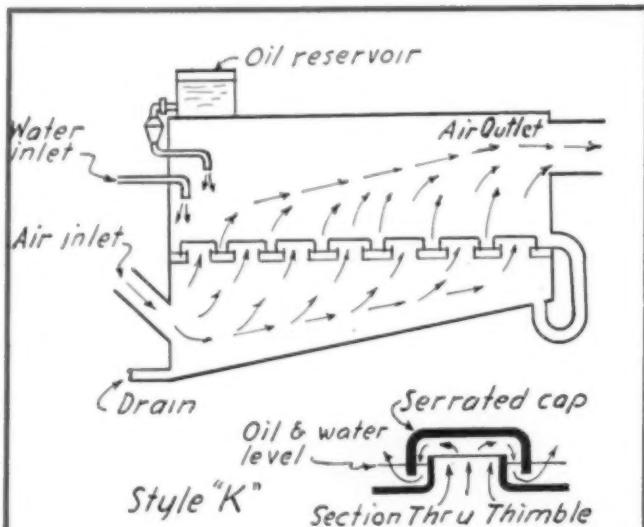


Fig. 8—Froth-flotation style collector. Dust laden air is pulled up through water covered with oil—mixes with oil and drains through trap.

usual type of scrubbers or air washers which have been tried in the dust collection field. The author has indicated such characteristics as were available without having them verified.

An equipment using oil flotation which utilizes the bubble tower principle is shown as Style K (Fig. 8). This newly developed apparatus was announced and displayed a few years ago. Dust-laden air is drawn through ducts to a distributing chamber. The air passes upward through thimbles and is deflected downward by means of hooded bells passing first through water and then through a froth filter carpet. The filter carpet is obtained by frothing oil on the surface of the water. The dust trapped in the wetting agent is floated over an adjustable weir to a settling chamber. The cleaned air passes to the exhaust manifold and into the atmosphere.

The characteristics shown for Style K in Table 1 are based on tests made in the laboratory of a well known technical school. These tests were made using dusts similar to that encountered in the foundry. Additional time and practice will be required to determine the full scope of application of this equipment in the foundry dust collecting field.

#### Other Types

Attempts have been made to adapt many other types of collecting equipment to foundry dust, such as the dry air filter using a paper composition filter medium, the viscous film filter, and the usual types of air washers. Little success has been met with these types of equipment in the foundry dust collecting field as they are either not suited to the type of dust, or the dust concentration is far beyond the range of the equipment. For these reasons, they have been purposely omitted from this paper. The dry air filter is effective in cleaning air for ventilating and positive pressure respiratory systems, as the viscous type filter is suitable for cleaning air to compressors. Such services are not within the scope of this paper.

#### Disposal

The disposal of the collected dust often presents a real problem, as once the dust is collected it must not be liberated into the air. There are many types of

equipment such as screw conveyor loaders, etc., which can be adapted to most installations. Often the dust is so fine that it cannot be transported in open wagons or cars and if air tight wagons or cars are used, the vibration in transit settles the dust so that the whole mass becomes hard and cannot easily be discharged. A method of overcoming this difficulty, which has been used quite successfully, is to discharge the dust into an agitated water tank some 2 ft. below the surface of the water, thus mixing a sludge composed of water and dust. This sludge can be readily pumped to the disposal point by suitable sludge pumps. After each pumping the sludge line should be thoroughly purged with clean water to prevent settlement in the line.

#### Power and Maintenance

The power requirements of the various dust collecting equipments will depend altogether on the particular installation. In centrifugal collectors of the low efficiency type it may be as low as 1 H.P. per 1000 cu. ft. of air per min. and as high as 3 H.P. in the high efficiency unit, where it is necessary to greatly increase the air velocity in the collector in order to collect a greater proportion of the extreme fine particles. In general, it can be said that the maintenance on these types of machines is relatively low, as the only upkeep involved is caused by abrasion on the collector and fan. The fan is usually protected by being placed at the outlet end of the collector, thus handling the finer and less abrasive particles. To overcome this wear, the centrifugal fan type collector has a rubber lined rotator and casing when installed for abrasive dust.

The power required in cloth collectors will vary from 1 to 2 H.P. per 1000 cu. ft. of air per min. depending upon the relative size of the equipment and the concentration and nature of the dust. Maintenance is relatively high because of screen and bag replacement. Also, the equipment is more elaborate as there are more moving parts to keep in repair and adjustment.

In the washer type collector the air velocity is relatively low with a corresponding low power requirement of 1.5 H.P. per 1000 cu. ft. or less. The water recirculated will contain relatively large amounts of dust unless large and hence expensive settling tanks are provided. Due to the small amount of water recirculated, the total cost of pump maintenance would not be high.

The power requirement for the oil-flotation collector is approximately 1.5 H.P. per 1000 cu. ft. The water and settling tank requirements approximate those of the washer type. Only a small amount of low cost oil is required.

#### Conclusions

In solving a foundry dust problem there are many factors to be considered. In northern climates the shop buildings are necessarily completely enclosed and the operations compact. Many of them are in densely settled communities. Such conditions demand highly efficient dust collecting equipment which in some cases might approach air-conditioning practice. In the south we find open type buildings with maximum natural ventilation in thinly populated areas. Under such conditions a much higher dust concentration can be discharged from the operations without undue pollution of the surrounding atmosphere.

(Continued on Page 147)

# Painting Steel\* [Part 2]

By Wilbur C. Porter

As part of the general research program of the National Bureau of Standards on building materials and structures, a study has been made of the surface treatment and painting of steel for protection against corrosion. The results obtained in the early phases of the work were published as two Building Materials and Structures Reports, BMS8 and BMS44. This paper concludes the investigation with a description of the results of the tests on priming-coat and topcoat paints.

## **Painting Galvanized-Steel Surfaces**

### **I. Preparation of the Surface**

**H**OT-DIP galvanizing ordinarily produces a smooth and spangled structure, to which organic finishes do not readily adhere. It is well known that it is difficult to get paint to adhere satisfactorily to new zinc-coated surfaces. Many explanations have been advanced for this lack of adhesion. For example, zinc salts may be left on the surface during the galvanizing process, certain chemical reactions may take place in the paint film itself, and reactive decomposition products in the presence of moisture may react with the metal at the interface. Zinc formate has been isolated at the interface between the paint and the metal zinc surface. This formation of zinc formate has been suggested as one of the possible causes for the poor adherence of paints to galvanized steel.

Pretreating new galvanized steel before painting it was found beneficial. Many chemical solutions have been recommended for this purpose. Some of these merely etch and roughen the surface. The test results indicate that the best treatments do more than merely roughen the surface to hold paint—they change the surface chemically, depositing a nonmetallic film that prevents reaction between metal and paint, increases the adherence of the applied paint, and retards corrosion under the paint film. Solutions of the zinc-phosphate type, sold under proprietary brands, apparently accomplish these functions to a great extent. Galvanized-steel panels treated with such zinc-phosphate solutions showed marked improvement when compared with untreated panels in increasing the protective value of paints applied over them and gave the best results in all the tests. Phosphate-treated galvanized steel sheets are available commercially.

Dirt or greasy material should be removed by cleaning with a solvent, such as turpentine or mineral spirits, before pretreating or painting.

### **2. Results of Accelerated-Weathering and Outdoor Exposure Tests of Priming Coats on Galvanized Steel**

*(Table 1 appeared in February issue)*

Of the primings listed in Table 1, 35 were tested on galvanized-steel panels. The results indicate that

\*Reprint of bulletin—"Building Materials and Structures, Report BMS 102," National Bureau of Standards, Dept. of Commerce.

great care should be exercised in the selection of a priming coat to be applied to the smooth, spangled surface of hot-dip galvanized steel. Very few primings proved to have satisfactory adhesion on the untreated panels. For this reason two ratings have been given, one for primings on untreated panels and the other for primings on phosphate-treated panels. It should be noted that there is a decided difference in the two ratings. The property of adhesion was given major importance in classifying the performance of primings on galvanized steel. The ratings on untreated galvanized panels are given in groups in order of decreasing merit as follows:

Group 1: Primings 9, 34, 61, and 68.

Group 2: Primings 1, 3, 4, 6, 7, 8, 12, 21, 35, 36, 60, and 74.

Group 3: Primings 2, 5a, 11, 13, 14, 15, 17, 23, 24, 25, 27, 29, 30, 31, 32, 33, 37, 38, and 39.

Here again, as in the rating of the primings on plain steel, it is admitted that some of the primings might be shifted to a neighboring group, and that all the primings in any one group are not to be construed as being equal in protective value. There are many factors to be considered in the interpretation of the results of exposure tests, and the importance attached to each will influence the final rating of the paint. All the primings under group 1 on untreated galvanized panels have good adhesion and are satisfactory for use on untreated galvanized metal. They are also satisfactory as finish coats under normal outdoor conditions and may be used in one or more coats. One coat hides completely and is adequate for many service conditions on new galvanized steel. Two coats are ample for old and slightly rusted galvanized steel surfaces, except under exposure conditions that may require added protection by special finish coats. These primings retain their color very well on prolonged exposure. Number 9 is a zinc dust-zinc oxide alkyd type paint conforming to Federal Specification TT-P-641, Type II, and is especially suitable for use on zinc coated metal.

The primings in group 2 showed fairly good adhesion, especially when a soft drying top-coat, such as lampblack in oil, was used over them. However, when they were coated with a hard-drying white topcoat, the tendency to flake, scale, or peel was evident from the results of the accelerated weathering machine. Primings 4, 6, 12, 35, 36, and 60 are suitable for use without a topcoat finish, and when used alone in one

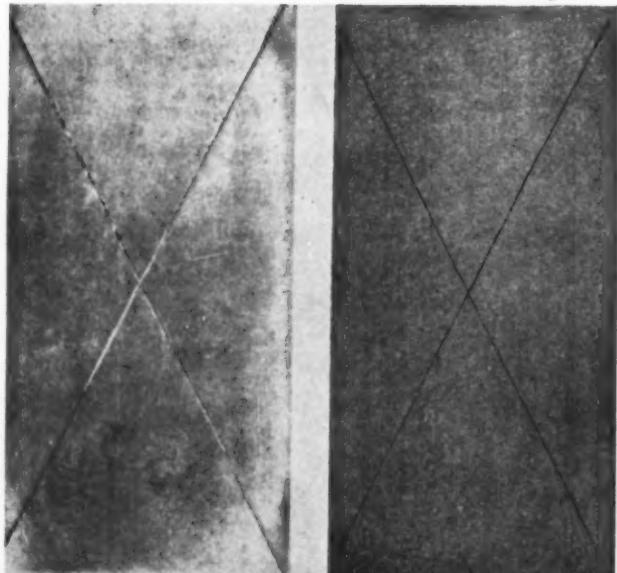


Fig. 2—Left, untreated galv. 2 coats priming 9. Right, untreated galv. 2 coats priming 68.

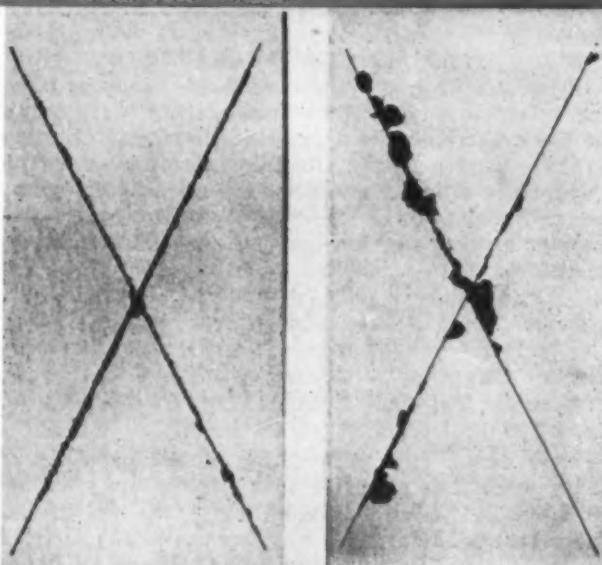
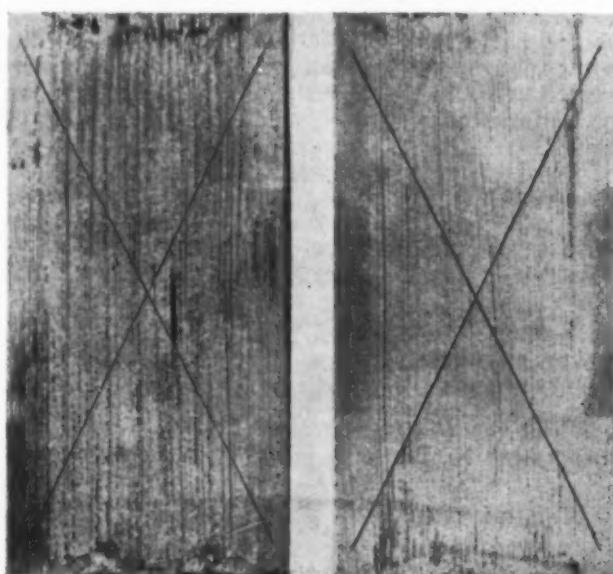


Fig. 4—Left, untreated galv. 2 coats priming 1 plus 1 topcoat 113. Right, 2 priming 5a, 1 top coat 113.

Below—Left, Phosphate treated galv. 2 priming 7, 1 topcoat 114. Right, Phosphate treated galv. 2 priming 9, 1 topcoat 114.



or two coats will give good service under ordinary climatic conditions.

In group 3, under untreated galvanized panels, the zinc chromate and iron oxide-zinc chromate primings failed by lack of adhesion. As will be shown, the performance of the primings in groups 2 and 3 is much better when applied to a phosphate-treated surface. In testing primings on untreated galvanized metal it was noticed that thin coats adhere much better than thick coats. Since lack of adhesion is one of the chief causes of failure of paints on new galvanized metal, it is advisable to use as few and as thin coats as will give the desired appearance.

The ratings of primings on phosphate-treated galvanized panels are given in groups in order of decreasing merit as follows:

Group 1: Primings 1, 3, 4, 5a, 6, 7, 8, 9, 12, 30, 31, 32, 33, 34, 35, 36, and 61.

Group 2: Primings 2, 14, 21, 23, 24, 25, 27, 37, 38, 39, and 60.

Group 3: Primings 11 and 13.

Primings 15, 17, 29, 68, and 74 were not tested on phosphate-treated panels. From the above ratings it will be seen that the protective value of most primings on galvanized metal is distinctly improved when applied to a phosphate-treated surface. Many of the primings that fell in groups 2 and 3 under the ratings of untreated panels are placed in group 1 on phosphate-treated panels. The improvement in the adherence of zinc chromate and iron-oxide-zinc chromate primings was particularly significant. These primings were found to have good rust-inhibitive properties and were very effective in preventing corrosion on phosphate-treated galvanized steel.

Economy, availability, type of surface (treated or untreated), and climatic conditions are important factors to consider in selecting a paint. By referring to the description of the primings in Table 1 and their ratings given above, the painting of galvanized steel should present no great problem. In some cases Federal specification paint may be required, but for the general buying public, similar products are usually available under trade brands from most paint dealers.

Figures 2 to 5, inclusive, are shown to illustrate the different stages of breakdown in a paint film. Figure 2 shows two panels in good condition after five years of outdoor exposure. The left-hand panel in Figure 4 shows slight flaking along the scratches, and the right-hand panel shows peeling along the scratches. In Figure 5 the left-hand panel shows checking and cracking; the panel on the right shows checking only.

The effect of a phosphate treatment is illustrated in Figure 6. The panel on the left was untreated before painting, whereas the panel on the right was phosphate treated. Both panels have the same priming and topcoat and were exposed for six months in the accelerated-weathering machine.

#### Topcoat Paints

In Table 2 is given the designation, description, and group rating of the topcoat paints tested.

#### I. Results of Tests of Topcoat Paints

All the paints listed in Table 2 were exposed outdoors on primed steel panels. A selected number were exposed in the accelerated-weathering machine on galvanized and plain-steel panels, both primed before application of the topcoat.

The function of the final coat on steel is to protect the underlying coats and to give the desired color. In one case the protective value of the finish coat may be

TABLE 2

| Designation | Description, description, and group rating of topcoat paints   | Group rating |
|-------------|--|--------------|
| 101         | Aluminum paint. 2 pounds aluminum powder Federal Specification TT-A-476, Type A, per gallon of varnish, Federal Specification TT-V-81.   | 1            |
| 102         | Black paint in oil vehicle. Federal Specification TT-P-61, Type B. March 31, 1931.   | 1            |
| 103         | Lampblack in oil paint. 13 percent lampblack pigment by weight. 87 percent linseed oil, thinner and drier.   | 1            |
| 104         | Black iron oxide paint. 39 percent pigment by weight: 94 percent black iron oxide. 6 percent red lead. 61 percent vehicle by weight: 85 percent linseed oil. 15 percent thinner and drier.   | 1            |
| 105         | Iron oxide paint. 43 percent pigment by weight: 100 percent spanish iron oxide (84% $Fe_2O_3$ ). 57 percent vehicle by weight (oil and phenol modified alkyd resin varnish): 45 percent nonvolatile containing 19 percent of glyceryl phthalate. 55 percent volatile mineral spirits.  | 1            |
| 106         | Olive green enamel, glyceryl phthalate type, Post Office Department Specification, revised as of October 31, 1939.   | 1            |
| 107         | Titanium barium-zinc oxide (cream) in alkyd resin vehicle. 46 percent pigment by weight: 50 percent titanium-barium. 40 percent zinc oxide. 10 percent asbestos. 54 percent vehicle by weight: 57 percent nonvolatile oil-resin, containing 31 percent glyceryl phthalate. 43 percent volatile mineral spirits.              | 2            |
| 108         | The paint was tinted cream with yellow oxide in oil. Gray house paint. 64 percent pigment by weight: 20 percent lead titanate. 25 percent basic lead carbonate. 26 percent zinc oxide. 29 percent magnesium silicate. 36 percent vehicle by weight: 87 percent processed linseed and tung oil. 13 percent thinner and drier. | 2            |
| 109         | International Orange Paint. 70 percent pigment by weight: 90 percent basic lead chromate. 10 percent magnesium silicate. 30 percent vehicle by weight: 30 percent raw linseed oil. 10 percent spar varnish, TT-V-121a. 10 percent drier.   | 2            |
| 110         | Chrome Green Paint. Federal Specification TT-P-71, Type B. August 19, 1930.  | 2            |
| 111         | Titanium dioxide-zinc oxide (cream) in alkyd resin vehicle. 36 percent pigment by weight: 80 percent titanium dioxide, nonchalking. 20 percent zinc oxide.   | 2            |
| 112         | Titanium dioxide-zinc oxide—Continued. 64 percent vehicle by weight: 50 percent nonvolatile oil-resin, containing 20 percent glyceryl phthalate. 50 percent volatile mineral spirits.  | 2            |
| 113         | Lead titanate-zinc oxide (cream) in alkyd resin vehicle. 48 percent pigment by weight: 80 percent lead titanate. 20 percent zinc oxide. 52 percent vehicle by weight: 50 percent nonvolatile oil-resin, containing 20 percent glyceryl phthalate. 50 percent volatile mineral spirits.                                       | 2            |
| 114         | Titanium dioxide-zinc oxide (white) in alkyd resin vehicle. 34 percent pigment by weight: 80 percent titanium dioxide. 20 percent zinc oxide. 66 percent vehicle by weight: 50 percent nonvolatile oil-resin containing 20 percent glyceryl phthalate. 50 percent volatile mineral spirits.                                  | 3            |
| 115         | White lead-zinc oxide in oil paint. Federal Specification TT-P-36a, Type II, Class B. July 23, 1938.   | 3            |
|             | Titanium-zinc-lead in oil paint. Federal Specification TT-P-101a, Type A. March 11, 1936.  | 3            |

of major importance, whereas in another case the decorative effect may hold prominence. From the results obtained in these tests it was found that aluminum, black, and dark-colored paints are more durable than white or light-colored paints. This appears to be in general agreement with actual service performance. Also, it was noted that if a white lead-zinc oxide base paint is tinted, for example, to a light- or medium-gray color, the durability is improved. The retention of color, gloss, and general appearance of dark-colored linseed-oil paints can be improved by adding a small

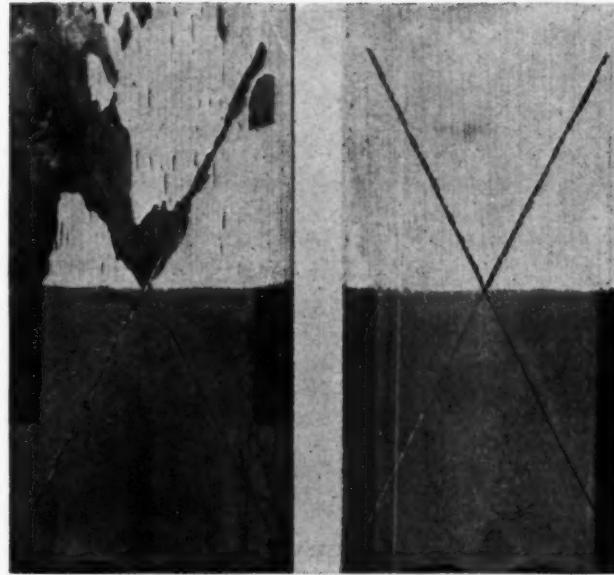


Fig. 6—Left panel—Untreated galvanized after 6 months exposure. Right panel—Phosphate treated galvanized after 6 months exposure.

amount of spar varnish to the paint. This should not exceed 1 pint of varnish to 1 gallon of paint, and care should be taken to select a varnish that will mix properly with the particular paint. Some of the newer specification paints contain a small amount of varnish in the ready-mixed paint as received. For example, Federal Specification TT-P-71a states that the liquid in the ready-mixed paint shall be a fortified linseed-oil vehicle consisting of a mixture of 70 per cent of linseed oil, 20 per cent of nonreactive spar varnish, and 10 per cent of combined drier and thinner.

From the exposure results, the topcoat paints have been rated in groups in the following decreasing order of merit with regard to durability:

Group 1: Paints 101, 102, 103, 104, 105, and 106.

Group 2: Paints 107, 108, 109, 110, 111, and 112.

Group 3: Paints 113, 114, and 115.

In group 1 will be found aluminum, iron oxide, olive drab, and black paints. These paints have exceptional resistance to the effects of sunlight and outdoor weathering. They are recommended particularly for structures where the maximum protective value is desired and decoration is of minor importance. Aluminum paint would be the best where moisture and high humidity prevail.

Group 2 contains the tinted and dark-colored paints.

Paint 109, International Orange, and paint 110, Chrome Green, are very durable and are recommended where their respective colors are desired. On exposure, these paints show fairly good color retention, but the color becomes rather "dead" and somewhat "faded" because of mild chalking. In the latest Federal specifications covering these types of paints, the vehicle contains a small amount of spar varnish, which improves the color retention. Paint 108 is a house paint of the slow-drying oil type tinted to a light-gray color. It dries overnight to a soft film, and several days should be allowed for drying between coats. Paint 107, 111, and 112 are cream tinted, synthetic resin alkyd (oil) type topcoats, which dry a smooth, glossy finish. They dry faster than the orthodox type of oil paint and on outdoor exposure tend to show some chalking and fading.

All the paints in group 3 are white. Paint 114 and 115 are the linseed-oil type and are widely used house paints. The white lead-zinc oxide paint, No. 114, can be obtained in a great variety of tints that will remain fairly stable. Federal Specification TT-P-101a, Type A, represented by paint 115, covers the requirements for a white oil paint for general outside use. Since tints made with this type of paint are likely to show early fading, it should be used only as white. A paint conforming to Federal Specification TT-P-40, Type I, Class B (not included in these tests), is a special fume-proof (lead-free) paint intended for use where sulfide fumes, which will darken paints containing lead, may be encountered. Federal Specification TT-P-40, May 19, 1943, entitled Paint; Oil, Exterior, Ready-Mixed, Light-Tints and White, now supersedes Federal Specifications TT-P-36a, TT-P-101a and TT-P-156. Paint 113, in group 3, is an alkyd (oil) type of white paint that dries to a smooth, glossy finish. From a decorative point of view, this paint retains its whiteness for a long time as it chalks rather freely, and any accumulation of dust or dirt on the surface is readily washed off by rain. Although not as durable as the tinted paints in group 2, it does have the advantage of giving a very white appearance especially during its early exposure period.

In many cases, the selection of finish-coat paint for metal structures, buildings, and equipment is entirely a matter of choice, and depends on whether the protective value or the decorative effect is of primary significance. For warehouses, storage houses, bridges, water tanks, agricultural implements, and industrial buildings the paints in group 1 above would probably be most satisfactory. On the other hand, for resi-

dences and dwellings, the less durable white and tinted paints will be preferred for esthetic reasons.

#### Summary and Conclusions

A large number of priming- and finish-coat paints, representing various types, were tested for durability and protective value against corrosion by means of accelerated laboratory and outdoor-exposure tests. The composition of the paints and the relative ratings, based on their performance in these tests, are discussed in detail in this publication. Many paints have satisfactory properties that make them suitable for use in protecting metal structures. Locality, temperature, humidity, kind of surface (galvanized or plain-steel) interior or exterior exposure, and general climatic conditions should be considered before selecting a protective coating.

Careful cleaning and preparation of the surface are considered more important than the quality of the paint. The performance of the best paint materials available will be doubtful if little or no attention is given to cleaning and preparing the surface. The tests showed that clean phosphate-treated surfaces materially improve the adherence and protective value of paints.

Zinc chromate and iron oxide-zinc chromate primings, when properly formulated with a synthetic-resin vehicle, make very good rust-inhibitive coatings. A system composed of phosphate-treated galvanized steel, zinc chromate priming, and aluminum topcoat paint combines to a high degree the essential requirements necessary to withstand corrosive atmospheres.

The types of primings rated in group 1 for plain steel surfaces should be used where atmospheric conditions may be severe. For locations where climatic conditions tend less to induce corrosion, the primings in group 2 should be satisfactory.

Treating new galvanized steel before painting is recommended. Emphasis is given to the importance of preparing the metal surface, and the improved performance of synthetic resin primings when applied to phosphate-treated surfaces.

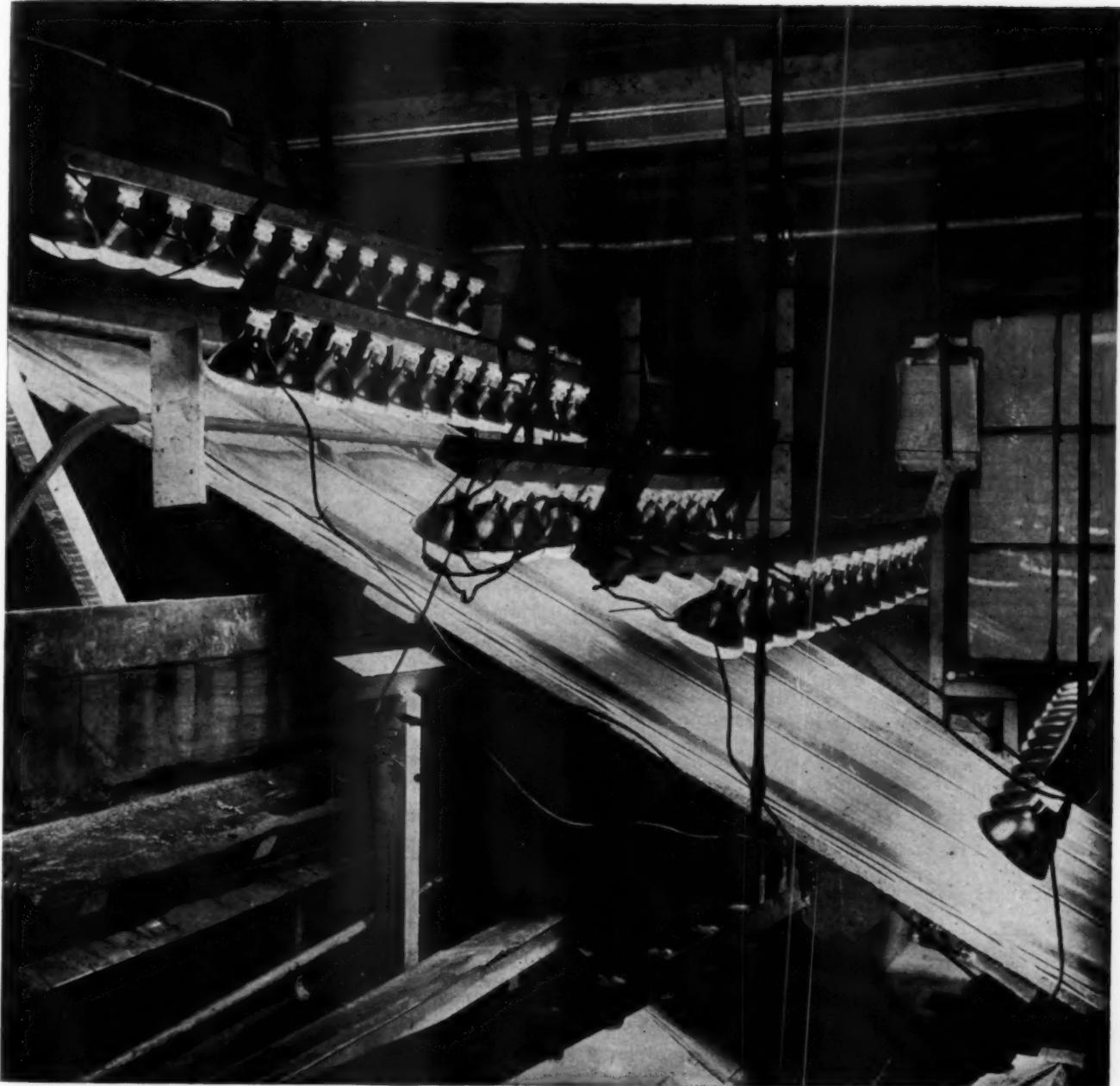
The zinc dust primings rated in group 1 under untreated galvanized steel are intended for application on new or old galvanized surfaces, and no chemical treatment of the metal is contemplated before using these primings, but accepted treatments may be used if it seems desirable.

Under the ratings on phosphate-treated galvanized steel, primings in both groups 1 and 2 have satisfactory adhesion and will give good service when applied to such surfaces. Naturally, in the more corrosive atmospheres the rust-inhibitive primings in group 1 should be given preference.

Appearance and local custom will likely be the dominating factors in choosing finish paints for low-cost steel houses. Except in the neighborhood of industrial centers or marine atmospheres, the conventional white or tinted linseed-oil house paints will be satisfactory. In some cases the enamel-like long oil alkyd topcoats may be preferred. As long as the metal is protected from attack by the elements, the question of when to repaint a house depends largely upon individual opinion, but painting should be often enough to keep the appearance consistent with local standards.

Since the cost of application is the major item in painting any structure, price should not be the deciding factor in selecting the materials. However, higher initial cost of materials may in the end be more economical.





Tests on experimental roof panel being conducted in the Revere Laboratory.

## We used heat to get "light"

THIS PHOTOGRAPH, of an experimental copper roof panel being tested in the Revere Laboratory, was taken by light that was mostly heat. For the kind of light Revere was seeking in this research was information, knowledge, understanding—that we could pass on to you.

To get it, we had to bring the sun indoors, or at least its summer heat. Also sudden rainstorms, to create a temperature range of 160°. And put under them a typical sheet copper roof panel such as any skilled worker might install on a building. Then we could see what happens when cold rain hits sun-baked copper, could measure any movement in the metal—could, in short, find out why sheet copper construction sometimes fails, even when materials, design and workmanship all appear virtually perfect.

From these and other Revere tests came the basic but simple principle of column strength, from which we have worked out new data and methods that will enable you

to install and repair sheet copper with assurance that its service life will be all its owner desires.

These principles will be fully explained and illustrated in a new booklet to be made available. On request we will put your name on our list to receive a complimentary copy when issued. Write the Revere Executive Offices. Revere materials are handled by distributors everywhere. For help in any difficult problems, call on the Revere Technical Advisory Service, Architectural.

**REVERE**  
COPPER AND BRASS INCORPORATED  
*Founded by Paul Revere in 1801*  
Executive Offices: 230 Park Ave., New York 17, N.Y.

# ASSOCIATION ACTIVITIES



## National Contractors

The Sheet Metal Contractors National Association, Inc., sent out the following report from President Patrick S. Varden on February 8:

Dear Member:

"I have attended several meetings and conventions in the past year and have discussed both the business outlook and conditions in the building construction industry with the officers and some of the leaders in the various trade associations.

"After reviewing the reports on postwar plans, federal, state, and private, I believe there should be a substantial amount of work in the construction industry, provided our contractors are well organized and in a position to co-operate with the planning authorities to support and regulate this proposed work, and the problems involved. I have found in talking to some of the officers in other trades a desire for closer co-operation of our trade association and all agree that strong associations are necessary to place our industry on a sound and co-operative basis.

"Our Sheet Metal Contractors National Association has shown a steady growth in the past year. From the reports received from different parts of our country, and the members of our board of directors, all sheet metal and roofing contractors realize the necessity of having a strong national body to protect and promote their trades.

"We had a very successful meeting of our board of directors at St. Louis, October 13 and 14. We appointed three new directors to more adequately represent our association in different parts of the country; they are, C. H. Ruebeck of the C. H. Ruebeck Co., Waco, Texas; J. R. Walker of J. R. Walker & Son, South Bend, Indiana, and S. E. Fox of Fox & Co., Denver, Colorado.

"The architect and engineer co-operation committee, with Chairman J. E. Merrick, Louisville, Ky., in its report presented a resolution, the objective of which is to eliminate bid peddling and chiseling. This resolution requests all architects and engineers to insert a clause in their specifications requiring all general contractors to list and have read at the bid letting, the bid of all sheet metal and roofing contractors whose bid they used in making up their estimate. The reading of these sub bids will do much to eliminate this unfair practice. Our Board of Directors adopted this resolution on October 14. It was presented to the New York State Sheet Metal Roofing and Air Conditioning Contractors Association Board at its meeting in Syracuse and adopted by them on December 2, and to the New York State Association of Builders, who adopted it at their convention in Buffalo, N. Y., on December 12.

"The resolution of our architects and engineers co-operation committee in co-operation with other trades can save our contractors far more in one year than it would take to operate our National Association for several years.

"We also received the report of the apprentice training committee. Chairman Frank Kramer of Milwaukee, Wis., has presented a plan that can be adopted by state and local associations. We understand this plan is working satisfactorily in the state of Wisconsin and we are working for its adoption by local and state associations in cooperation with other trades and organized labor to set up proper training centers.

"This I feel is a very important program as the shortage of mechanics is acute in all trades. We must pro-

vide for the apprentices who are serving our country, and who desire to return to their trade. They will be many years older when they return and cannot be expected to start at the old rate, but they will need additional training to become finished mechanics. All that is possible should be done for these returning service men. The proposed plan will provide for adult as well as apprentice training.

"Our contractors, by becoming an active part of our national program, can help in providing for our returning service men, in protecting our industry and helping themselves. It is therefore an obligation and a privilege that should be exercised by all."

National Secretary Clarence J. Meyer reports that because of Mr. Brynes' order cancelling conventions of more than 50 people to ease the burden on transportation, the national convention in St. Louis, Missouri, will not be held.

Directors, however, believe that a Board of Directors meeting is necessary to carry on the business of the Association and each state association or group of members not affiliated with a state association should elect one delegate with powers to act for his association or group. This delegate should have voting powers at the meeting to be held in St. Louis on April 30 and May 1. In this manner, there will not be more than 50 officers and delegates in attendance.

"Favorable comment has been received from the A.I.A. on the 'bid peddling' resolution presented. It has been given to their committee for action at their next meeting to be held on April 15. If this resolution is approved by the A.I.A., it will right a great injustice that our industry has put up with for many years. Copies are available. Your help is needed now in presenting these resolutions to your local and state architects and engineers.

"At the present time a membership campaign is in progress. We are writing six letters to 6,000 shops in the U.S.A. in the hope of getting at least 2,000 new members representing every state in the Union. You can help the cause by getting your fellow contractor interested in our activities.

"Shortages of steel will become increasingly apparent. Many manufacturers and jobbers are not accepting orders for light gauges of steel before December 1, 1945, or January, 1946, except on high priority ratings. Our advice is to anticipate your requirements and purchase your materials now for the balance of 1945."

## National Contractors

To Architects, Engineers, and Awarding Authorities on Contracts pertaining to the Sheet Metal, Roofing, Warm Air Heating and Air Conditioning Industries.

Dear Sir:

The following resolution was approved by the Sheet Metal Contractors' National Association, Inc. We hope that you will give it your very earnest consideration:

### RESOLUTION

WHEREAS, the present method of awarding contracts through general contractors allows the unfair general contractor to take advantage of a condition that is not fair to the owner, architect, or honest general contractor, and

WHEREAS, this is a constant annoyance to the legitimate sheet metal and roofing contractors

THEREFORE BE IT RESOLVED, by the Directors of the Sheet Metal Contractors' National Association, Inc.,

## Association Activities . . .

in a meeting assembled in St. Louis, Missouri, October 13 and 14, 1944, that we appeal to the Officers and members of the American Institute of Architects and Engineers to use their good office to correct some of the abuses in the contracting industry existing between subcontractor and general contractor, by calling upon all architects in the various chapters of the A.I.A. to insert a clause in all of their specifications requiring all general contractors to list the names of all sub-contractors whose bids were used in making up their quotations on both basic and alternate proposals.

This we believe, will help to eliminate the general contractor who bids with the expectation of bid peddling, and the sub-contractor who is ready to chisel. Both work to the detriment of the industry, the job, the owner, and the architect, for if they chisel the price, they will also chisel the job.

JACOB MERRICK, Chairman,  
Louisville, Kentucky.

HARVEY ORTON, Barberton, Ohio.

J. VICTOR KING, Sanford, North Carolina.

RUDOLPH GUENTHER, Chicago, Illinois.

Sheet Metal Contractors' National Assn., Inc.

PATRICK S. VARDEN, National President,  
Albany 1, New York.

CLARENCE J. MEYER, National Secretary,  
569 Genesee Street, Buffalo 4, New York.

### Kansas City

Sheet Metal & Heating Contractors Association, Kansas City 3, Missouri, started five years ago with only four members but now has seventy per cent of the shops in Kansas City, which totals 69.

Present officers are:

President.....N. A. Alcorn  
of Alcorn Sheet Metal & Air Conditioning, 3412 E. 27th St.  
Vice-President.....H. Johnston

of Johnson Furnace Co., 1425 Agnes Ave.

Treasurer.....G. W. Blaich  
of Central Industrial Sheet Metal Works, 801 State Line.

Business Manager.....Leo Coffey  
of Dawson Furnace & Roofing Co., 3801 Woodland Ave.

Financial Secretary.....H. Waters  
of Waters Sheet Metal Works, 5909 Troost Ave.

Recording Secretary.....W. L. Tate  
of Tate Sheet Metal & Furnace Works, 2631 Askew Ave.

The association is now strong enough that they are trying to put through a heating code for their district.

### New York City

Roofing and Metal Crafts Institute, Inc., got off to a good start at the first meeting of the year on January 10. The Group Insurance plan, proposed a few months ago, was discussed and arrangements are now under way to put the plan in operation.

An open letter has been addressed to the Real Estate Board of New York requesting that landlords consult a legitimate contractor who is fully equipped to handle roofing and sheet metal work to provide the necessary insurance protection for workers, rather than an individual "on the side" in spare time.

Latest government regulations are provided in each issue of the Institute Ticker, as well as a Swap column for machinery and equipment wanted or for sale.

John Matuszewski, head of the Matus Roofing Company, 616 Hudson Street, New York, and a charter member of the Institute died on January 18. His son Charles now becomes head of the firm. The Institute extends deepest sympathy to the family.

Peter O. Wierenga, 231 Brown St., Grand Rapids 7, Michigan, died Tuesday morning, February 20. Burial Friday following. Mr. Wierenga is a past president, was treasurer, served as secretary, 1944 vice president of the Michigan Sheet Metal, Roofing, Heating and Air Conditioning Association. On June 15 of last year the Michigan association presented him with a set of golf clubs in long delayed recognition of his fine service to the association.

### Saginaw Valley, Michigan

The Saginaw Valley Sheet Metal, Roofing, Heating and Air Conditioning Contractors' Association held a dinner meeting on December 7th, 1944, at the Home Dairy, Saginaw, and elected the following officers:

President—A. Wiegand.

Vice-President—Elmer Schartow, Midland.

Secretary-Treasurer—Alfred M. Klop, Saginaw.

On January 7, 1945, there was a rabbit dinner meeting at Schartow Service, Midland, with 31 men present. Jay Biddle, State Secretary, gave a report on the State convention that was to be held in Flint. The association went on record to support a State License Code.

On February 13, the association held their Second Annual Dinner Dance at old Heidelberg Gardens. Fifty couples enjoyed chicken dinner and dancing.

A committee composed of Charles Bryon, Arthur Lange, Ernie Ackerman, Marshall Vallette and A. C. Klop, Elmer Schartow, Floyd McCoy, and Alfred M. Klop were guests at the Detroit meeting on February 15, 1945.

Alfred M. Klop, Secretary-Treasurer.

### Detroit

The Detroit Association of Warm Air Heating and Air Conditioning Contractors, Inc., is sponsoring a school which began on March 3 and will run three or four consecutive Saturdays as may be required to cover the course. There will be two sessions daily: Morning—9:30 to 12:00 and afternoon—1:00 to 3:30, in the Blue Room, Fort Shelby.

The Subject: the Code Manual for the Design and installation of Warm Air Winter Air Conditioning Systems. Section 7 of the Practical Warm Air Heating Code of the National Warm Air Heating & Air Conditioning Association.

Instructors are Fred A. Bishop, Robert Champlain and Edwin B. Rooth. These men are exceptionally well qualified by reason of years of engineering experience in this work and by reasons of years of teaching the "Short Course" at Michigan State College.

The class is limited to not more than fifty and eight of these are taken up by the FHA, leaving 42 available.

Members of the association and any of their key men are eligible. It was specified when the plans were made that any heating firm or their employees in the area were eligible. The school is free except for necessary materials.

N. J. Biddle, Secretary.

### Florida

The February 15 issue of The Florida Roofer, issued by The Roofing & Sheet Metal Contractors Association of Florida, announces a 1945 meeting at Orlando on May 18 and 19, at the Angelbilt Hotel.

President Fred Falkner has set the dates. Certain matters of importance must be brought before the members and officers. Plans are being formulated and comments from members, manufacturers and their representatives will be welcomed by Mr. Falkner, care Falkner, Inc., P. O. Box 673, Orlando.

Abe Kohn of Miami, one of the well known members of our association passed away recently. The association extends sympathy to Ellard and the others of the family.

Ben J. Esko of Esko Roofing Co. of Chicago, Second Vice-President of the United Roofing Contractors Association, and Myron Powell, former president and now a director of the URCA, stopped in West Palm Beach recently and discussed with Secretary Burgess the matter of national affiliations and told something of the activities of the URCA. Representation in Washington is one of the big selling points of the URCA.

L. A. Burgess, Secretary-Treasurer.

### Wisconsin

The Sheet Metal Contractors Association of Wisconsin Board of Directors held their monthly meeting on February 9, 1945, and all matters pertaining to the annual convention were adjusted. Everything is being held until such time as the association will be permitted to carry out the program for which complete arrangements had been made.

Paul L. Biersach was appointed a delegate to attend the National association meeting in April.

# Association Activities . . .

## Saint Joseph Valley

The Saint Joseph Valley Furnace and Sheet Metal Contractors Association, Inc., meets the first Monday in each month and is now in the midst of promoting a new heating ordinance.

Our new ordinance is nearly complete, and will go to the City Council the first week in March. This ordinance when passed, will have an initiation fee and licensing fee of \$20.00, and \$15.00, making a total of \$40.00 for the first year, and \$15.00 for every year thereafter.

The City Code is being formed very slowly, as we are doing everything possible to get our City ordinance through first.

J. R. Walker, President.

## Milwaukee

The Milwaukee Sheet Metal Contractors Association, Inc., met on February 3 at the Schroeder Hotel, and the Labor Committee report consumed most of the evening so that other subjects had to be postponed until the March meeting. The Committee was instructed and authorized to make the arrangements for the best interest of members.

The Post War Committee Plan is still incomplete. At the December 8, 1944, special meeting, subscriptions were taken for the purpose of carrying on the proposed plan of this Committee. Subscription Forms were released to the entire membership designating the amount classified by the Committee. The response was fair.

Consideration has been given to Indenture the Apprentices through a Committee instead, as now, through the employer. Comments are invited.

Paul L. Biersach, Secretary.

## Central Committee, Chicago

The Central Committee—a sort of clearing house of progressive thoughts for the heating and sheet metal industry of Chicago and the Metropolitan area adjacent to Chicago—has held each year several open meetings for the benefit of the so-called outsider with valuable information free. This year, there will be very few of the open meetings, but the association has arranged an interesting series of meetings that will include various speakers on such subjects as:

- Fuel and fuel combustion.
- Operation and installation of barometric draft controls.
- Comparison of design and characteristics of various heating units.
- Humidifier installation problems.
- Thermostat installation problems.
- Ventilation and dust collecting.
- What can be expected from modern tools and equipment.
- Best method of shop layout.
- Profits and possibilities of furnace cleaning.
- Salesmanship and advertising discussions.
- Employees and apprenticeship.

The speakers and the program are under the supervision of three of the industry's outstanding leaders in their field of endeavor. They are:

Lou Reining, chairman, the blower man.  
Ed. Nemech of Northwestern Stove Repair Co.  
J. Harry Ebbert of Grant Wilson, Incorporated.

The speakers chosen and their subjects indicate that non-members should make an effort to obtain the help of the association through membership.

Officers of the Central Committee are:

President—A. R. Harris, formerly of Chicago, but now of Hammond, Indiana—a sheet metal contractor for 33 years, and as a hobby makes a few bending brakes.  
Vice-President—John Titterington, The Burnside Sheet Metal Works, 9350 Cottage Grove Avenue, Chicago.  
Secretary—H. M. Dally, 6622 Madison Ave., Hammond, Indiana, represents the younger progressive element of the profession.  
Treasurer—Marvin Lawrence, Highland Park, Illinois, a young progressive shop owner and a real association worker.

The Ways and Means or Legislative Committee is composed of Ed. Carter, Lou Reining, Louis Dreholb, R. T. Teppet, Art Nelson, Fred Hempel, and Wm. Kirby (at the door as Inner Guard).

The Central Committee meets the second Friday of each month at the Midland Hotel, 172 West Adams Street.

A. R. Harris, President.

## Cook County, Illinois

The Sheet Metal Contractors Association of Cook County held their first noon luncheon meeting at 12:30 Wednesday, February 21st, 1945, in the Blue Room at the Builders Club at 228 No. LaSalle Street, Chicago.

The guest speaker was L. W. Morrell of the Revere Copper & Brass Company. His subject: "Basic Facts on Magnesium." Besides supplying considerable printed material on the subject he also presented a large array of finished articles showing how well it could be fabricated. The talk was received with great interest on the part of those present and a lively question and answer period followed.

The following applications were approved for membership:

Archer Sheet Metal Works, 2275 So. Archer Avenue.  
Eagle Cornice Works, 2726 No. Sheffield Avenue.  
Firecraft Door Company, 3319 So. Wallace Street.

Our next meeting is scheduled for March 21st at 12:30 at the Builders Club.

Wm. J. Perkinson, President.

## Illinois

It was agreed at the Board of Directors meeting of the Sheet Metal Contractors Association of Illinois, held at the Jefferson hotel in Peoria on January 6th to go along with the order issued from Washington, D. C. (not to hold a convention during the year 1945 on account of the serious transportation problem).

"I sincerely hope all of you feel the same way about this matter as your Board of Directors.

"You will be informed from time to time through bulletins (sent out by the secretary) just what your officers and directors are doing.

"We intend to continue holding regional meetings throughout the year. We have found this to be very successful. So far we have gained considerable in membership by holding these meetings. Of course our funds are very limited, but most of the officers and directors are paying their own expense to make these meetings possible.

"If you have any problem you intended bringing up at the convention, put it in writing and mail, and I will answer your question to the best of my ability.

"At the present time I am working on something that will benefit all the furnace dealers in the state. I expect to have this ready to present to the Board of Directors at our next meeting. It is not far enough advanced at this writing to give you any particulars (although the wheels are beginning to turn).

"If you have any ideas for the betterment of our association, please send them along. What we want are some good constructive ideas that will help build up our organization.

"So again I say let's all be good soldiers and do everything within our power to help end this terrible conflict." I am sincerely your President

Edward M. Pluth, 125 S. Sangamon St., Lincoln, Ill.

## Fox Valley, Illinois

The regular monthly meeting of the Fox Valley Furnace & Sheet Metal Contractors' Association was held at Fairbanks Cafeteria, Aurora, on February 20.

After the minutes were read and accepted, Jack Stowell, president, who attended the National Warm Air Heating Association convention at Cleveland, gave a brief summary of their plan for advertising.

The Fox Valley Association plans to hold a one-day heating school for members of the association and their mechanics and salesmen soon. Guy Voorhees, instructor.

Our annual "Get Acquainted Night" is to be held in April as usual.

Election of officers followed. Our 1945 officers are:

President—Jack Stowell.

First Vice-President—William Stevens.

Second Vice-President—William Klinkey.

Secretary—Fred R. Lamp.

Treasurer—Andrew Lind.

Sergeant-at-Arms—George Bushman.

Directors:

Aurora—Don Glossop, George Roesch.

Elgin—Clayton Eveline, Fred Nolting.

Naperville—George Lenert.

Oswego—Henry Heffelfinger.

Fred R. Lamp, Secretary.

# A PROFITABLE MARKET

**—that's going to be bigger than ever before**



● PROFIT—that's what stainless steel sheet metal work means to the shops that can handle it. The years just preceding the war proved this fact to many sheet metal contractors who worked Republic ENDURO Stainless Steel.

What are you going to do about getting your share of this business after the war? Are you thinking now about the possibilities in your territory? Are you planning on what you can make and for whom you may make it? Are you looking for information on the best ways to work stainless steel and the precautions to take?

If so, write us TODAY for copies of two helpful Republic books, "The Fabrication of Republic ENDURO Stainless Steel" and "The Welding of Republic ENDURO Stainless Steel." They contain detailed information and recommendations on various methods of fabricating and welding stainless steel. They also contain many useful tables.

Both books are free to sheet metal contractors—so write us NOW!

**REPUBLIC STEEL CORPORATION**  
Alloy Steel Division • Massillon, Ohio  
GENERAL OFFICES • CLEVELAND 1, OHIO  
Export Department: Chrysler Building, New York 17, N.Y.



Other Republic Products include Black, Galvanized, Zinc Coated, and Aluminum.

# New Products

For your convenience a number has been assigned to each item. Circle the items in which you are interested on the coupon on page 114 and mail to us.

△ Indicates manufacturer not listed in 1945 Directory.  
● Indicates manufacturer not listed in 1945 Directory.

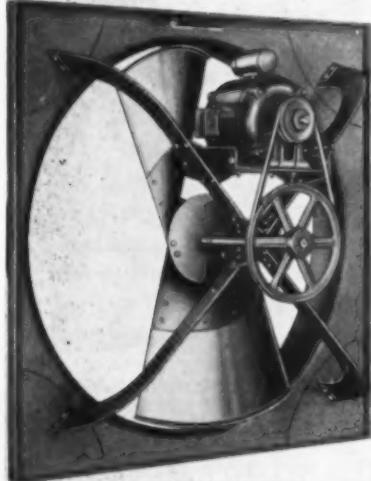
## △ 10—Dulseal

Charles Bruning Company, Inc., 4754 Montrose Ave., Chicago 41, Illinois, offers Dulseal — a tissue-thin, transparent film for protecting, preserving and repairing tracings, drawings, black and white prints, blueprints, maps, records, charts, sketches.

## 11—Propeller Fans

The Herman Nelson Corporation of Moline, East Moline and Chicago, Illinois, has developed a new and improved line of propeller fans for industrial, commercial and public applications. These new fans are available with either direct or belt drive and in a wide range of sizes and air deliveries.

The most important exclusive feature of the new propeller fan is the "air-foil" profile with the pitch in-



creasing toward the hub. The peripheral edge of the blade, also incorporating an "air-foil" profile, is flanged backwardly to reduce air turbulence. Fan blades are fabricated of aluminum and formed by the hydraulic pressure method.

This new line of Herman Nelson Propeller Fans has a flexible, steel arm motor mounting. Four steel arms hold the motor rigid horizontally and vertically, but are designed to allow slight rotation of the motor frame around the shaft to absorb shock and dissipate torsional vibration and prevent its transmission to the panel.

Each fan through the 36-inch size has only two blades while the larger

three sizes have three blades. Herman Nelson engineers have used the minimum number of blades required to keep any sound caused by the fan at the lowest possible pitch. Another feature of the design to permit delivery of more air with less noise is the streamlined air inlet in the steel panel.

## ● 12—Dust Collector

Ideal Commutator Dresser Company, 1084 Park Avenue, Sycamore, Illinois, announces a powerful yet inexpensive unit type Dust Collector.

Standard attachments simplify installation on grinders, buffers, sanders, polishers, lathes and other machines. Being compact in size it readily fits behind or beside machines.

500 cubic feet per minute is developed through the two inlets by a  $\frac{1}{4}$  hp., 3450 rpm. motor, driving a  $7\frac{1}{2}$  in. dia. x 20 in. wide squirrel cage blower wheel.

Dust laden air is drawn through the inlet pipes into twin cyclone separators where it is whirled around at high speeds. The dust particles being heavier than air naturally move more slowly and drop down into the dust drawer. The lighter air passes on through a viscous coated filter where



very fine dust is removed. Clean air is discharged back into the room. The two 3 in. dia. inlets can serve either one or two machines.

The filter consists of 20 layers of viscous coated filter paper. To restore the filter's efficiency after it becomes dirty, it is only necessary to peel off the first two layers. This can be done five times without affecting its cleaning ability.

Dimensions are 20x20x38 in. high. Shipping weight: 265 lbs.

## 13—Electrode W-27

General Electric Company, Schenectady, New York, announces a new heavily covered arc-welding electrode for flat and horizontal fillet welding as well as for flat butt welding. Desirable wherever weld requirements include high mechanical properties,



rigid X-ray examination, good profile, high deposition rate, and good surface appearance, the applications of this electrode include pressure vessels and pertinent connections, heavy machine bases, and structural parts such as column plates, columns, roof trusses, beams, and girders where the thickness of the section permits.

Known as Type W-27, the new electrode is characterized by an exceptionally high melting rate which results in increased production and higher speeds at the same welding current as other electrodes. At comparable production speeds, Type W-27 requires less heat input to the joint, thus reducing warpage and internal cooling stresses.

Readily recognized by its steady, forceful, spray-type arc, the new electrode operates on alternating or direct current with either straight or reverse polarity. It has low spatter loss and easy slag removal and produces welds of excellent appearance. It is available in three sizes: 3/16 by 18 inches,  $\frac{1}{4}$  by 18, and 5/16 by 18 inches, and is rated A.W.S. classes E6020 and E6030.

# Don't Wait for the Victory Whistles to Start Blowing!

**What do we mean?** Just this: The time has come for distributors, jobbers, dealers to decide what line of oil heaters they are going to sell postwar. The time has come when one of the most important suggestions we can make is to urge the unsettled brethren to clear their mental decks for action and reach positive decisions.

**This is** amazingly important to the men who have been hopefully waiting and postponing. The whirling that has been going on in so many undecided heads may develop into a more serious problem . . . unless decision is reached.

**Decisions** made and relations entered into, even when no actual merchandise is available because of war conditions, are important, helpful and vital to the industry, but especially to you.

**Suppose you are interested** in representing TORIDHEET heating equipment, sold on its quality, its performance, prices, popularity and low cost of maintenance—why not free the situation, clear it of all hazards that persuade delay? Decide. Decision will help you. It will give you instantly a sound intelligent basis for planning. It is as helpful to the manufacturer as it is to you.

**The Toridheet line** is well known. Toridheet Rotary and Gun type burners are recognized as top flight in design, construction and performance. Their service record is unsurpassed. Our advertising plans will definitely help you. Our policies protect our dealers and wholesalers. Our prices are in line. Our programme progressive and helpful.

**If your decision** is not already made in favor of Toridheet, get in touch with us so that you may receive latest current information.



## TORIDHEET DIVISION

CLEVELAND STEEL PRODUCTS CORP. • CLEVELAND 2, OHIO

*Oil Burners • Air Conditioning Units • Oil-Burner Boilers  
Coal and Gas Furnaces • Oil Water Heaters*

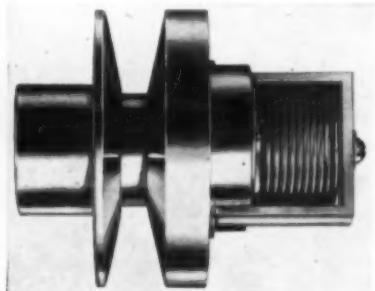
# New Products . . . . .

For your convenience in obtaining information regarding these items, use the coupon on page 114.

## • 14—Thermodrive

Webster Electric Company, Racine, Wisconsin, announces Thermodrive, a thermally operated pulley to regulate the speed of a blower fan to produce even temperatures in warm air heating and air conditioning equipment.

Thermodrive is capable of smoothly and gradually changing the speed of a belt-driven air circulating blower by as much as 70 per cent on actuation



of the charged bellows by the temperature of the furnace bonnet. Air from the bonnet is fed to the bellows through a suitable conduit.

Thermodrive is a simple, compact unit. It consists of but four parts—a brass charged bellows and protecting cage, a chrome plated stationary sheave and a sliding sheave bushed with an oilless bearing.

The expansion or contraction of the charged bellows causes the Thermodrive sheaves to open or close changing the position of the V belt to a larger or smaller driving circumference. To bring about this expansion or contraction of the charged bellows in a warm air system a small volume of air from the furnace bonnet is continuously fed to the Thermodrive through a conduit thus causing the air circulating blower speed to vary with changes in furnace bonnet temperature. Thermodrive is also adaptable and operates in a similar manner on split systems where steam and hot water boilers are used. In this case warm air from the heat exchanger is used. Thermodrive on a single speed motor also lends itself to improved operation of a high-low heating system because it always adjusts itself to supply the proper volume of circulating air to suit furnace temperature.

Belt tension is held approximately constant either by hinging one side of the motor foot so that the motor swings to and from the driven shaft or by use of an idler pulley under spring tension.

A saving that Thermodrive makes possible is the loss of air circulation due to dirty filters with the attendant fuel loss. As the filters get dirty, the bonnet temperature rises. This causes the Thermodrive to increase the

blower speed automatically and compensates for the effect of the dirt.

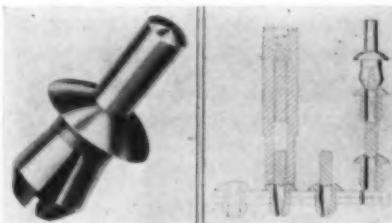
The simplicity, compactness and low cost of Thermodrive makes it adaptable to forced air heating systems powered by motors to  $\frac{1}{4}$  hp.

## △ 15—Des-Rivets

The Plastic Development Division of the Victory Manufacturing Company, 1105 Fair Oaks Avenue, South Pasadena, California, announces a new plastic blind rivet permitting one man operation and blind fastening. The design of the Des-Rivet is based on a wedging action and takes full advantage of the flow characteristic of plastic materials under pressure.

"Des-Rivets" are molded as one piece consisting of a head with plug attached by a thin breakaway section and a tapered shank split to form four tapered fingers. The shank and head are hollow to the same diameter as the plug, as shown in Figure 1.

The "Des-Rivet" is applied (Figure 2) by pressing the tapered fingers into a drilled hole. Taper on the outside diameter of the fingers reduces the inside diameter of the shank, the rivet and work being held in place by the pressure of the depressed fingers. Impact from the rivet gun, which may be manual or air operated, instantly



neously shears the plug and drives it into the plastic shank until the plug is flush with both ends of the rivet, maintaining the contour of the rivet head. Complete installation is accomplished by this single operation.

The wedge action of the plug in the tapered shank expands the fingers against the walls of the drilled hole and upsets the shank end of the rivet (Figure 2). The fact that the "Des-Rivet" creates its own upset end by flow of the plastic allows for a wide variation in the thickness of the materials being used.

"Des-Rivets" may be singly inserted or assembled in "sticks" by inserting the undriven plug of one rivet into the shank of another. An automatic rivet gun is available to accommodate sticks of rivets, making possible a very high rate of installation.

A wide variety of shapes and sizes are available in several plastic materials including Nylon. Conventional and special colors may be obtained.

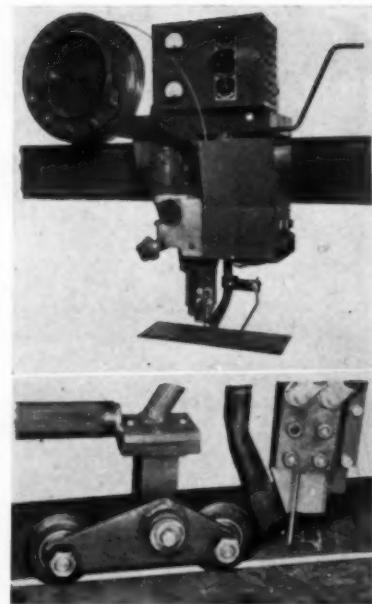


Fig. 1 (Top) — New carriage type "Lincolnweld" mounted on overhead beam. Fig. 2 (Bottom) — Roller guide for "Lincolnweld" tractor showing rollers in butt joint of work.

## ● 16—Arc Welding Process

The Lincoln Electric Company, Cleveland 1, announces a new type of automatic welding known as "Lincolnweld" (Trade Mark Registered).

The process is designed for use with direct current, utilizing a bare metallic electrode which is fed through a granular flux deposited on the joint to be welded. Sufficient flux is applied to completely blanket the arc and the molten metal; the unfused flux is then reclaimed for further use.

Extremely high current densities are used. For example,  $\frac{1}{8}$ -inch diameter electrode may carry as much as 650 amperes. This produces greater penetration and permits smaller cross section of weld metal with resulting saving in cost and reduced warpage and distortion.

The "Lincolnweld" process is less sensitive to scale and moisture than conventional automatic methods.

The particular advantages reported are as follows:

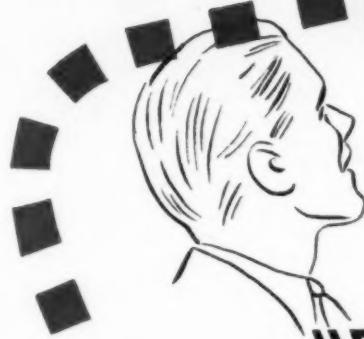
First—One type and grade of flux, with one analysis of electrode, can be used with the same procedure for a wide range of steel analyses.

Second—The equipment will take  $\frac{1}{8}$ -inch to  $\frac{7}{32}$ -inch electrode without changes of drive rolls, wire contacts or control.

The welding head is normally used in conjunction with a specially built automatic welding set of 1200 ampere capacity. The current rheostat in the automatic control box permits a current range of 300 to 1200 amps.

Fig. 1 shows the welding head, with flux hopper, wire reel and control mounted on a motor driven carriage. For square butt welding, a pointer is used for following irregular seams. For prepared joints, roller guides are provided for engaging the seam (see Fig. 2).

# Thinking About YOUR Post-War LINE



## HERE'S WHAT VICTOR OFFERS

### 1 A Furnace Line Famous for Quality

Hall-Neal "Victors" have been standard for high quality since 1890. The patented, heavy Base Ring; the DeLuxe three-flue Radiator; Automatic Damper; heavy boiler plate steel, cold-riveted and heavily welded — are all points which give you something better to sell and . . . less to service.

### 2 Exclusive Heat Radiating "FINS"

The famous "Victor" FINS are an exclusive, fuel saving feature which makes sales easier . . . adds exclusive distinction to your line. In a "Victor" more metal heats more air . . . with the same amount of fuel.

### 3 A Staff of Heating Engineers Helps You Sell

An experienced staff of 6 practical Heating Engineers, headed by Guy A. Voorhees, furnishes you promptly with workable heating layouts for any job.

### 4 More and Easier Sales Make YOU

### More Money!

**WRITE US!** We'll gladly give you full particulars of our line. Tell us about yourself — your organization, qualifications and territory. Line up with a quality line that is **KNOWN** for quality . . . make your post-war plans NOW!



Table Top  
FIN DEMONSTRATOR

The "Victor" Table-top FIN Demonstrator will sell furnaces for you . . . right in the home or office of your prospect. It operates before their eyes . . . proving, in a few minutes, the extra, FREE heat provided by Victor FINS.

FURNACES — OIL BURNERS — STOKERS — GAS BURNERS — BLOWERS — ACCESSORIES

**HALL-NEAL FURNACE Co.**

VICTOR Quality Furnaces Since 1890

1326 N. CAPITOL AVENUE • INDIANAPOLIS 7, INDIANA

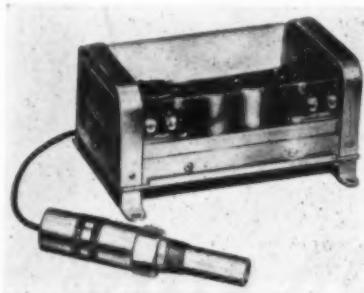
# New Products . . . . .

For your convenience in obtaining information regarding these items, use the coupon on page 114.

## • 17—Modutemp

Vapor Car Heating Co., Inc., Railway Exchange Building, Chicago 4, has developed Modutemp—a temperature regulating unit for heating and ventilating systems using motorized dampers for control.

Modutemp employs the principle of a temperature gap formed by two electrical contacts in a mercury thermostat which control individual relays. The contacts are set to meet the temperature specifications and range of requirements.



When mercury falls below temperature gap, damper motor runs toward heat position and both relays apply electric heat to the thermostat to assist mercury to rise again into gap. When mercury enters gap motor operation stops and heat from No. 1 relay cuts off slowing down rise of mercury. Damper holds this static position until mercury moves out of temperature gap between the two contacts. If mercury rises above gap damper motor operates toward cool position and No. 2 relay cuts off remaining heat on thermostat tending to make mercury fall and re-enter gap stopping damper movement.

## △ 18—Plier-Wrench

Seymour Smith & Son, Inc., 900T Main St., Oakville, Conn., has now ready for the market a dual-action hand tool—the Snap-Lock Plier-



Wrench—which can be used as a plier, a monkey-wrench, and a hand vise.

The jaws are corrugated and the bottom one is swiveled on a fulcrum. This design insures a full grip the entire jaw length. The tool may be used for clamping sheets, for drilling and scribing, and for holding pieces in position for soldering and welding.

The Snap-Lock Plier-Wrench is made in 7 and 10-inch sizes.

## △ 19—Adjustable Triangle

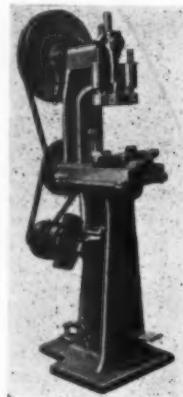
Charles Bruning Company, Inc., 4754 Montrose Ave., Chicago 41, offers the Bruning Adjustable Triangle No. 2598 A for engineers, draftsmen



and architects. The adjustable triangle is made of heavy, transparent plastic with molded-in calibrations of half degrees—any angle from 0 to 90 deg. A large-size thumbscrew enables quick setting to any desired angle. Size: base 6 3/4 in., altitude 7 9/16 in.

## △ 20—Punch Press

Maxant Button & Supply Co., 117 S. Morgan street, Chicago 7, has developed a new open face punch press suited to a wide range of small punch press work. Under actual operating conditions it works fast and accurately in such operations as stamping, perforating, blanking, punching,

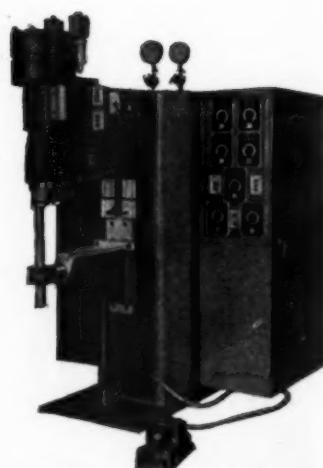


Throat height 10 in., depth 4 in. Distance of bed to slide is 7 1/4 in. Bed area 9 x 8 in. Stroke 2 1/2 in.

piercing, light drawing, forming and assembly jobs, crimping, die work and many similar operations.

Unskilled workmen can quickly turn out precision work within exceedingly close tolerance.

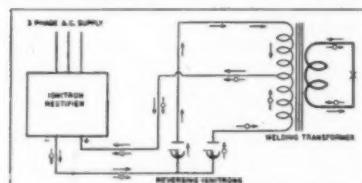
It works on metal, cloth, rubber, wood, synthetics and plastics.



## 21—Three Phase Welder

Sciaky Bros., 4915 W. 67th St., Chicago 38, announces a new principle for the spot welding of steel in heavy gauges with a balanced three phase load.

All three phases of the a.c. line current are rectified to d.c. and supplied to the welding transformer through a system of reversing igni-



tron tubes. These tubes allow the current to pass through the center tapped primary first in one direction, and then in the other. Thus, the induced welding current in the secondary is a continuous alternating impulse of low frequency—of ideal wave shape and magnitude.

This system helps overcome limitations encountered, where single phase a.c. welders are subject to heavy loads. These are: disturbance to the usual 3-phase supply by the unbalanced load, the heavy reactive load, which results in low power factor, and the high power demand. Power installation and operating costs are reduced by providing (1) a balanced three-phase load, (2) operation at near unity power factor, and (3) decreased power demand.

A typical spotwelder employing the "Three-Phase" principle (type PM-CO.2T-4) is rated 100 KVA at 50 per cent duty cycle and operates at 85 per cent power factor. A preheating current and variable pressure are provided. Capacity on mild, scaly or stainless steel is from .032 in. plus .032 in. up to and including .312 in. plus .312 in. Speed on two thicknesses of .062 in. is 90 spots per minute.

## • 22—Broken Drill Tools

Topflight Tool Co., Box 6728, Tewson 4, Maryland, offers a new tool—the Topflight broken drill adapter—designed and built in one piece in sizes to fit all drills.

# make hay with this 3-way cooperation

## IN YOUR POST-WAR WORK

Like other sheet metal contractors you want to get ahead; do better work with better materials; satisfy your customers; make more money.

One good way to do this is to tie up closely with the Armco Distributor and Armco. First, the Armco Distributor will have a full line of sheets, including Galvanized PAINTGRIP, Galvanized Ingot Iron, and Stainless Steels . . . These *plus* help on special problems and on-time deliveries.

### SEE WHAT ELSE YOU GET

But this is only the half of it. As a regular user of Armco Sheet Metals, you will be entitled to a complete line of shop-and-sales services. A free subscription to Armco Shop News to keep you up to date on trade news. Then shop and job signs, blotters, folders, mailing cards, a reliable cost accounting system, pattern books and much else.

Get set now to go with the Armco Distributor when the peace signal is flashed. Bring your customer-and-prospect lists up to date. Line up your post-war jobs. Plan for needed personnel and equipment. There are busy days ahead in the building construction industry, and 3-way cooperation among you, the Armco Distributor and Armco will help assure you of getting your share. The American Rolling Mill Co., 391 Curtis St., Middletown, Ohio.



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THE AMERICAN ROLLING  
MILL COMPANY, MIDDLETOWN, OHIO



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THE AMERICAN ROLLING MILL COMPANY, MIDDLETOWN, OHIO

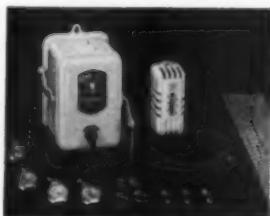


AMERICAN ARTISAN, March, 1945



Sampsel Coal Saving Controls for hand-fired furnaces and boilers come in complete, packaged units, No. 8873, shown above, consists of a Sampsel three-wire, low voltage Thermostat, a Sampsel Damper Control with built-in transformer, a Sampsel Warm Air Limit Control and all chains, pulleys, wire, hooks and screws needed for installation.

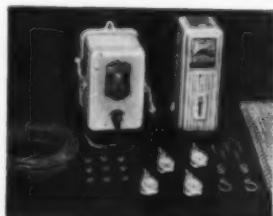
*Quality maintained*



No. 8870. This unit includes Sampsel Standard Thermostat, Sampsel Damper Motor and all accessories.

During these times when tremendous demands are being made upon our production facilities to meet the need for Sampsel Coal Saving Controls, the Sampsel policy of fine workmanship and thorough, individual inspection is being strictly maintained. You can be sure of Sampsel Quality.

*Design improved*



No. 8871 includes Damper Control, Sampsel Day-Night Dual Thermostat Electric clock and accessories. No. 8874 adds a limit control.

Sampsel Controls are a fitting complement to the modern home of today — and tomorrow! These units, beautifully finished in ivory, represent a distinct step forward in heating accessories. Their outstanding performance is reflected by their attractive and appealing designs.

**Sampsel**  
AUTOMATIC CONTROLS

Sampsel Time Control, Inc., Spring Valley, Ill.

# New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 114.

## 110—Storm Windows

Storm windows are discussed in language that anyone can understand in a four-page circular just issued by the Small Homes Council, Mumford House, at the University of Illinois, Urbana. With simple sketches and diagrams illustrating the points, the circular tells about storm windows in 1-2-3 order—what they are, why use them, which windows first, weatherstripping, how to fit them, hardware, painting and storing, and buying.

Some of the points presented in words and sketches are:

Storm windows reduce cold air leakage into the house and the amount of soot and dirt entering, increase temperature of the inside window glass surface, reduce drafts, increase floor temperature, and save fuel—as much as 20 per cent if all windows are covered, as much as 100 pounds of coal a year per window.

Install storm windows, if you cannot afford them all around, in this order: Rooms hard to heat, rooms exposed to West and North winds, rooms used most. On old houses storm windows are cheaper than weatherstripping; on new houses weatherstripped windows help till you get storm windows.

Fit storm windows with one-eighth inch clearance all around and tight against the blind stop of the window. Without side and bottom clearance, storm windows may swell with moisture, warp, and admit outdoor air.

Paint storm windows after fitting, number them and the windows corresponding, and store in vertical racks for greatest convenience.

Best buying season is summer. As many as 300 stock sizes are available. Total cost for average-size window is under \$4 with hardware, and \$1 to \$1.50 additional for fitting, paint, etc.

Home heating problems have been studied by the University for 30 years, and many of the facts presented in this circular are from this work. The circular was prepared by Prof. A. P. Kratz, Prof. S. B. Konzo, and W. S. Harris, all associated with the home heating research at the University, and Prof. W. H. Scheick, architect, and co-ordinator of the Small Homes Council.

## 111—Pipe Welders' Handbook

The Bruce Publishing Company, 540 N. Milwaukee St., Milwaukee 1, announces "The Pipe Fitter's and Pipe Welder's Handbook" by Thomas W. Frankland. Price \$1.25. Mr. Frankland is instructor, Steamfitting Department, Washburne Trade School, Chicago, and a member of the Pipe Fitters Association, Local Union 597 U. A., Chicago.

Contents include basic trade mathematics—square root, the circle, solving right triangles with trigonometry, pipe bends, linear expansion of piping, capacities of tanks (rectangular, cylindrical, elliptical, spheres, frustum-shaped), leverage, laying out angles, making a square, laying out ring gaskets; pipe-fitting calculation—offsets (simple and two-pipe, around obstructions, and special), tank coils, rolling offsets; pipe-welding layout—general, wrap around, turns, tees, laterals, true Y, reducers, blanking off pipe, welded offset formula, laying out elliptical-shaped hole on steel plate; and reference tables.

## 112—Practical Design for Arc Welding

The Hobart Brothers Company, Troy, Ohio, has ready for distribution Volume 2 of "Practical Design for Arc Welding" by Robert E. Kinkead; 100 additional welding design plates, cloth bound, 8 $\frac{1}{2}$  x 11 $\frac{1}{2}$  in. Price per volume \$3.50.

Volume 2 presents 100 new and different idea stimulators for use by designers, engineers, and fabricators—primarily structural, processing equipment, ships and piping.



### 11 MODELS

In capacities from 20 to 500  
lbs. per operating hour

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DOMESTIC & INDUSTRIAL *Automatic* STOKERS

NOW is the time to get in on the ground floor of this great *new* opportunity in the stoker field. STOK-RITE is the name. Built to sell . . . Built to win and hold owner good will . . . Built to give you a decisive competitive edge in quality and price. Take the first step today—now—toward a profitable, permanent, pleasant stoker connection. Write

in—by return mail—for details of our Pre-Planning Program that gives you a voice and part in shaping the kind of a sales program that dealers like. Don't wait—write now. Address Dept. C-1. for information about the new STOK-RITE PRE-PLANNING PROGRAM.



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STOKER DIVISION

MAPLE CITY STAMPING COMPANY

700 PARK AVENUE

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ILLINOIS

# New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 114.

## 113—Creative Finishing

Master Finishers, Inc., associated with Master Metal-coaters, 2415 South Prairie Avenue, Chicago, offers engineering and design service, complete manufacturing facilities, modern equipment and production skills applied with proficiency—finishes in hot lead alloy, copper, cadmium, zinc, caustic etch, sandblasting, lacquers, enamels, wrinkles.

## 114—Fractional H.P. V-Belts

The B. F. Goodrich Company, Akron, Ohio, has just issued a new handy conversion chart and price list for fractional horsepower V-belts. It gives the size and conversion data on standard "O," "A," and "B" section belts for refrigerators, washing machines, ironers, stokers, oil burners, pumps, wood working machines, compressors, grinders, blowers, and industrial machinery.

## 115—A Primer on Space Heaters

Evanair Division, Evans Products Company, Detroit 27, is distributing a 12-page booklet entitled "A Primer on Space Heaters" prepared for the layman to acquaint him with the types, function and applications of domestic space heaters. In preparing this booklet, Evanair has attempted to define a space heater, tell how it is used and what it can do. Reference is made to their products, but the general treatment of the text might apply to any space heater.

## 116—Conservation of Fuel for War

Industrial Mineral Wool Institute, 441 Lexington Ave., New York 17, N. Y., has reprinted Information Circular 7263 on the Conservation of Fuel for War, published by the Bureau of Mines, Department of the Interior.

This 21-page Government circular offers a great deal of helpful information about insulation materials and their application to high-temperature equipment.

## 117—Flux for Silver Soldering

Superior Flux Company, 913 Public Square Bldg., Cleveland, describes Superior No. 6 Flux for silver soldering (patented), and gives detailed instructions for its use, in a new 4-page bulletin. Superior No. 6 is an alkaline, non-corrosive, non-fuming flux, containing no free fluorides with an effective temperature range of 800 degrees (850 to 1650 deg.). It can be used with any low melting point brazing alloys or silver solders, for joining both ferrous and non ferrous metals and alloys.

## 118—High Speed Blind Riveting

E. I. du Pont de Nemours & Company (Inc.), Wilmington, Del., is distributing an 8-page and cover catalog illustrating their explosive rivets for high-speed blind riveting.

Du Pont explosive rivets are similar in size and shape to ordinary solid rivets, but differ in that each rivet is equipped with a small cavity within the shank. A tiny non-corrosive explosive charge is placed in this cavity which, when heated, expands the shank and sets the rivet. Explosive rivets are fired by using specially designed electric heating tools. Heat is transmitted through the head of the rivet to the expansion charge and in from 1½ to 2½ seconds fires the charge. The blind end of the shank is expanded into a perfect barrel-shaped head, with a diameter 15 to 30 per cent greater than the original shank.

## Save Fuel—Save Money— Heat Your Plant Efficiently

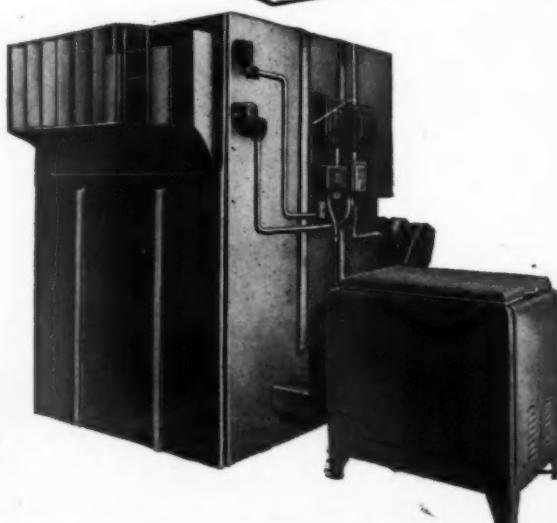
Airtherm Direct-Fired Unit Heaters operate only when you need heat. There is no waste of fuel during those hours when heat is not needed. There are no pipes to freeze up if unit is turned off overnight.

Original installation is economical, too, as there is no costly duct work to be installed and installation can be made in just a few hours.

Heat from the Airtherm can be directed to any part of your plant, eliminating "dead spots" and enabling all employees to work in comfort.

There is a size and capacity to efficiently and economically heat your plant. Send for bulletin giving complete information today.

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Direct-Fired  
**UNIT HEATERS!**



**AIRThERM**  
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706 South Spring Avenue • St. Louis 10, Missouri

# *A Rustfree home is less expensive... THROUGH THE YEARS*

NOTHING TAKES the joy out of homeownership any quicker than a leaky roof, red water from rust clogged water pipes or unlooked for repair bills. Yet many home builders have the mistaken idea that durable copper, brass and bronze are too expensive to be used in the small home.

A little investigation will prove that the exact opposite is the case... will prove that copper, brass and bronze are far *less expensive* in the long run.

The drawing below shows clearly just where your postwar home should have copper and copper

alloys... copper for flashings, gutters and downspouts... copper tubing or brass pipe for hot and cold water lines... Everdur for a rustless, long-lived water heater tank... solid brass or bronze for hardware... bronze for insect screens.

Now, while that home is in the planning stage, consult your architect on the advantages of rust protection. Talk to those fortunate home-owners who had the foresight to build with durable copper and brass, and learn about the upkeep savings they have enjoyed during these trying years.



## Anaconda Copper & Brass

THE AMERICAN BRASS COMPANY—General Offices: Waterbury 88, Connecticut  
Subsidiary of Anaconda Copper Mining Company • In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.



In recent surveys it was found that 3 out of 4 of our leading architects have recommended copper, brass and bronze for the medium priced home.

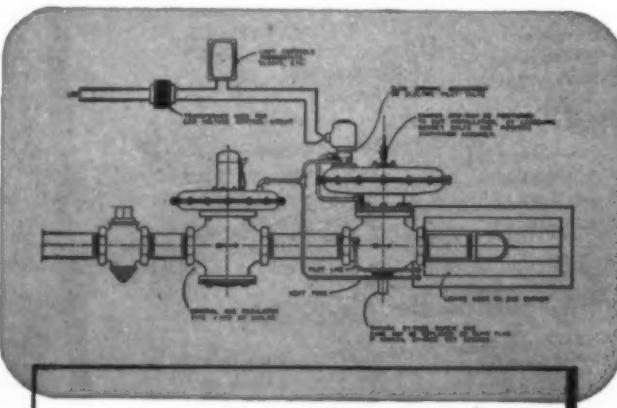
BUY WAR BONDS  
Buy more to save more

Here is another example of how The American Brass Company is keeping homeowners and future homebuilders sold on quality metals... This page advertisement in full color will appear in American Home Magazine, Better Homes & Gardens and Banking. A combined circulation of over four and one half million. 4543



# Insist on these 5 FEATURES

For efficiency, safety and economy, specify the ONE valve that answers *all* your requirements for industrial and commercial burners and furnaces.



## GENERAL CONTROLS Type B-55 Slow Opening Gas Valve

Here, in one sturdily-constructed easily-installed valve, you get everyone of these necessary features.

1. Adjustable opening time—5 to 60 seconds.
2. Widest operating pressure range—handles up to 5 lbs.
3. Widest range of sizes—available from  $\frac{3}{4}$ " to 6" i.p.s. for manufactured, natural or L. P. gases.
4. Ample power for louvre control. Damper arm easily rotated to any desired position.
5. Low current consumption. In sizes up to 1 $\frac{1}{2}$ " i.p.s. 8 watts; 2" to 6"—14 watts.

The advanced design of this valve has made it the choice of industry. Simplicity of design makes this unit fool-proof and trouble-free. Fast closing time is fixed, regardless of opening adjustment. The 3-way pilot valve is operated by the quiet General A.C. Solenoid. B-55's are fail-safe in the event of diaphragm rupture, current failure or binding damper mechanism.

For further information, contact your nearest General Controls factory branch or distributor, or write for Catalog 52-B.



# New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 114.

## 119—Ventilating Louvers

J & W Machine & Sheet Metal Co., 205 Putnam avenue, Marietta, Ohio, is distributing an 8-page catalog showing their standard line of louvers, fabricating sheet metal products, stampings, etc.

The company produces industrial ovens, direct fired air heaters, duct work and structural fabrication to complete all installations.

## 120—Installation Manual

Chelsea Fan and Blower Co., Inc., Irvington, N. J., offers a 48-page "Installation Manual of Ventilation Comfort Cooling for the Home and Industry."

Contents cover attic ventilation with diagrams showing what it is and how it works; installation and operating costs; selecting the proper size fan; methods of installation; window ventilating fans; attic fan operation methods; suggestions for installation and operation; home attic fans; twin attic units; industrial fans; exhaust fans; wall and window units; air circulators; equalizers; humidifiers; ozonators; with typical installations mentioned.

## 121—Wing Fans, Bulletin F-9

L. J. Wing Mfg. Co., 57 Seventh Ave., New York 11, has issued a condensed bulletin covering ventilating and duct type fans. It describes the new Wingfoil Fan Wheel, the Wingfoil Straight Line Duct Fan, and the Wingfoil Elbow type Duct Fan. "Duct Fan" is a new designation for what was formerly called an "Exhauster."

The bulletin illustrates many types of installation of the Duct type Fan. The Wingfoil Fan Wheel, especially noted for its "non-overloading" feature is described and illustrated as is the new Wingfoil Safety Fan with direct motor drive as well as V-belt drive. Capacity tables, dimensions and engineering data are included.

## 122—Technical Manual for Underfeed Stokers

Stoker Manufacturers' Association, 307 North Michigan avenue, Chicago 1, offers the new SMA "Technical Manual on Industry Standards, Recommended Practices and Technical Information," for distribution to the stoker trade and others interested in the selection and application of mechanical underfeed stoker equipment.

The manual is composed of eight separate sections, as follows: 1. **Glossary of terms**—defining the phrases and terminology used in the manual; 2. **Selection factors**—the major selection factors to be considered in the selection of stoker equipment and boilers or furnaces for stoker firing; 3. **Condensed table**—a condensation in table form of all the various selection factors; 4. **Standard codes and recommendations**—all of the standard codes and recommended practices established during the past several years by the Stoker Manufacturers' Association; 5. **Chimney data**—tables incorporating recognized information on sizes and heights of chimneys and smoke-stacks reprinted from current engineering guides; 6. **Stoker nomenclature**—for the first time in this section are published and illustrated the standard names of different major component parts of underfeed stokers; 7. **Coal data**—general information on Bituminous and Anthracite coals such as sizing and analyses and including a map of the coal fields of the United States; and 8. **Miscellaneous**—descriptive sheets showing care and operation of commercial and industrial underfeed stokers for both Bituminous and Anthracite, and complete tables showing areas in square feet of rectangles and areas of circles.

# FLUID HEAT OFFERS

# 7 DISTINCT ADVANTAGES to Sales-Minded Oil Burner Dealers

A name that goes back to the beginning of the oil-heating industry. Many Fluid Heat Burners are still doing yeoman service after seventeen to twenty years of use.

A manufacturer that has been serving American home owners for more than half a century and whose reputation for fair dealing and quality products has built national acceptance of his name.

A product properly designed and so ruggedly built that service problems are reduced to a minimum.

A complete line consisting of 9 Oil Burners—pressure and vertical rotary types—with firing rates from 7/10 to 12 gallons per hour; 8 Winter Air Conditioning Furnaces from 70,000 to 200,000 BTU/hr; 7 Burner Boiler Units in capacities from 475 to 840 square feet

of standing hot water; plus a 40-gallon Hot Water Heater that sells on its appearance and delights the buyer with its performance.

A basic idea that Dealer-Manufacturer relationships should be built on the premise that both are partners in a cooperative effort. As a result Fluid Heat Dealer mortality is less than 1% per year.

One of the largest Development Laboratories in the industry from which has come several outstanding contributions to Oil Burner design and whose post-war plans embrace a revolutionary combustion process of proven merit.

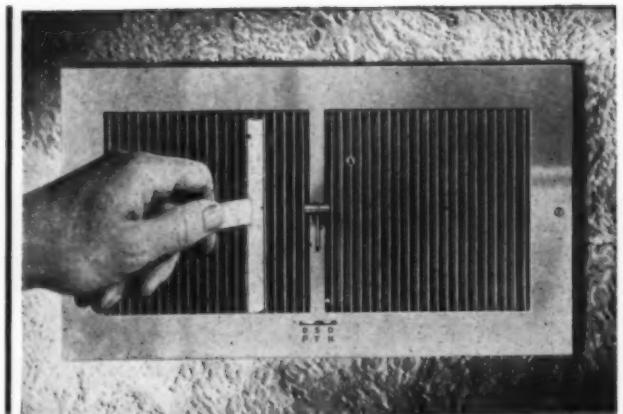
Plus valuable wartime experience in the design and construction of remarkably efficient combustion and heat transfer equipment for the Armed Forces.

Right now you are revamping your setup in order to be in the best possible position when normal operations are resumed. You will want a source of supply which has a sympathetic understanding of your problems and which will be your partner-in-effort. Therefore, get the complete factual story on Fluid Heat. No cost. No obligation. Write us today. FLUID HEAT DIVISION, ANCHOR POST FENCE COMPANY, 6720 Eastern Avenue, Baltimore 24, Maryland.

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A PRODUCT OF THE ANCHOR POST FENCE COMPANY,  
BALTIMORE, MD., ESTABLISHED 1892



## H&C No. 75 DESIGN FOR THE MAXIMUM OF A.C. PERFORMANCE!

Employs the Incomparable  
H&C TURNING BLADE VALVE

Any comparison you wish to make will quickly demonstrate that no other register will give you such thorough and complete distribution of the air flow; for no other register has the H&C TURNING BLADE VALVE.



### HELP YOURSELF and US TOO, BY ORDERING IN ACCORDANCE WITH BULLETIN S-95

The standardization program outlined in Bulletin S-95 was inaugurated to help us surmount some of the difficulties of the man-power shortage and problems of production faced by all manufacturers today. By ordering strictly in conformity with Bulletin S-95 you will help us to furnish you the registers you need in the shortest possible time. For No. 75 Design the sizes, recommended by the National Warm Air Heating and Air Conditioning Association, are as follows: Outlets: 10x4, 10x6, 12x4, 12x6, 14x4, 14x6; Returns: 10x6, 12x6, 14x6, 24x6, 30x6.

Items now being manufactured: Gravity Nos. 210 (will be No. 200 after April), 265, 130, 330, 345, 623, 653 and 550. A.C. Designs 74, 75 and 88. Also complete accessory line. See Catalog 42 and Bulletin S-95 for details. Ask your jobber or write us for Catalog 42 and Bulletin S-95 if you do not have them.



### HART & COOLEY MANUFACTURING CO.

*World's Largest Manufacturers of  
Registers, Grilles, Furnace Accessories*

HOLLAND • MICHIGAN

## New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 114.

### 123—Air Handling Equipment—Cat. 500

B. F. Sturtevant Company, Hyde Park, Boston, 36, Mass., offers "What We Make"—a 199-page pocket size catalog and engineering data book, containing description of complete line of air handling equipment and its application in a variety of industrial systems such as heating, ventilating, industrial air conditioning, drying, dust control, fume exhaust, vacuum cleaning, vapor absorption, etc. Catalog includes description of construction, sizes, and condensed performance tables. Fully illustrated with photos of units, system applications and sectional drawings. Also included are more than 800 pages of engineering and design data. Also many often-used formulas and tables and a new original psychrometric chart for determining values of air properties in heating, cooling, humidifying and dehumidifying problems.

### 124—Industrial Safety Chart Series

The Division of Labor Standards, U. S. Department of Labor, Washington 25, D. C., is co-operating with Mill & Factory on a series of Industrial Safety Charts designed to promote safe working practices around common types of industrial equipment. Series A on drill presses is the first in the series. Subsequent issues, published monthly, will cover circular saws, power trucks, lathes and other types of industrial equipment.

These charts will be particularly useful in employee training and educational programs, for mounting on bulletin boards, for reproduction in house organs and trade publications, in safety training manuals and other related ways.

### H&C DAMPER REGULATOR SETS



No. 40 $\frac{1}{4}$ S

**ECONOMY TYPE.** Three ways to install: 1. With lock nut but without handle (for tamper-proof setting). 2. With handle and lock nut. 3. With handle and wing nut. Nut prevents damper vibration. Handle always indicates position of damper (Patent 2,146,142). Furnished with handy snap end bearing. Complete set in carton. Made only with  $\frac{1}{4}$ " bearings.

LIST PRICE.....No. 40 $\frac{1}{4}$ S.....\$0.30



No. 50 $\frac{1}{4}$

**BRACKET TYPE.** Nut holds damper securely, preventing vibration. Handle which indicates position of damper, may be left in place permanently or removed after adjustment (to prevent tampering). Snap End Bearing on  $\frac{1}{4}$ " size, Solid Bearing on  $\frac{3}{8}$ " size. Each set individually packaged.

LIST PRICES.....No. 50 $\frac{1}{4}$ .....\$0.40  
No. 50% .....\$0.60



No. 80 $\frac{1}{4}$

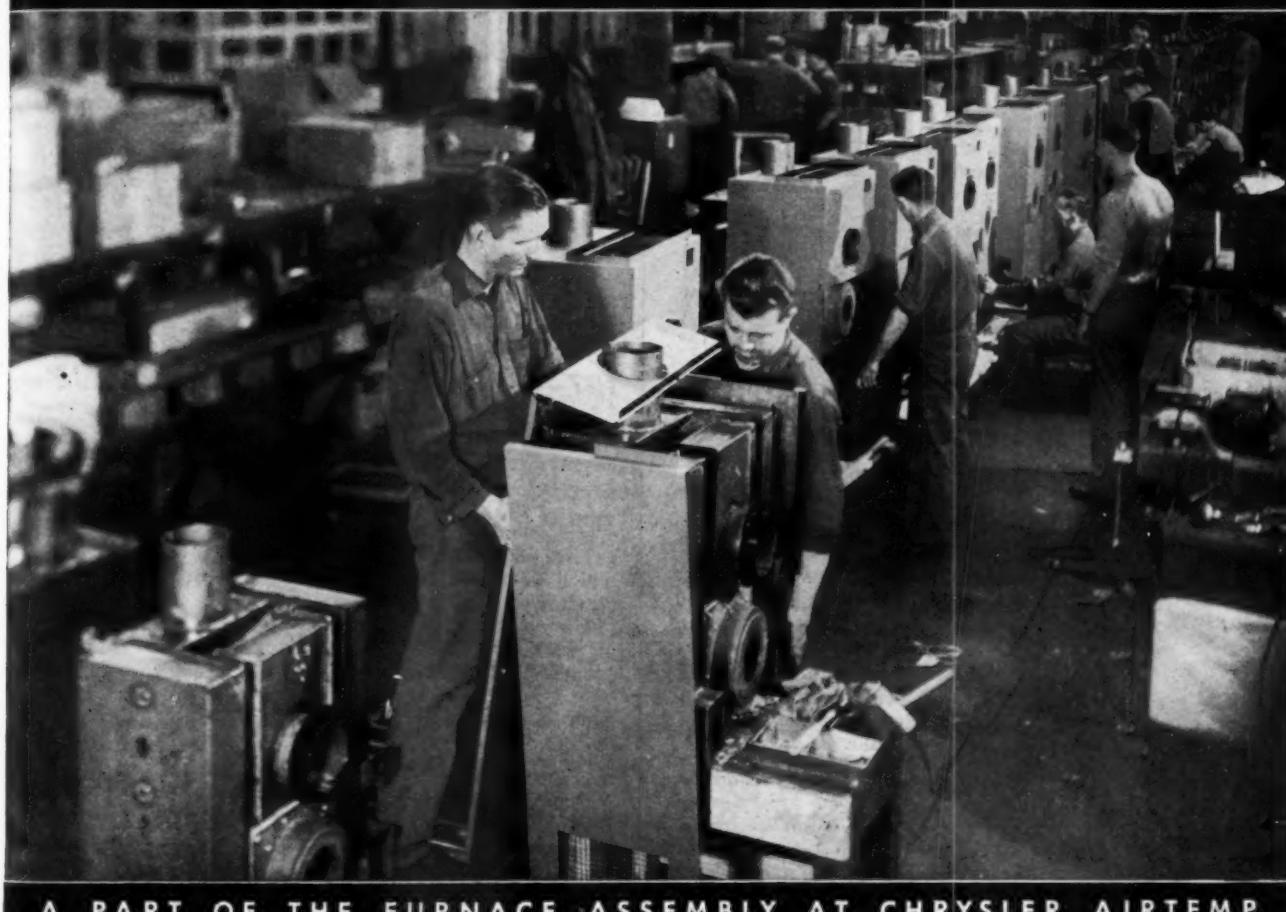
**DISK TYPE.** Like all H&C sets, this set is equally adaptable to splitter or regular dampers. Snap End Bearing on  $\frac{1}{4}$ " size, Solid Bearing on  $\frac{3}{8}$ " size. All parts are rust proofed. Complete set in carton.

LIST PRICES.....No. 80 $\frac{1}{4}$ .....\$0.40  
No. 80% .....\$0.60

*See your jobber or write  
for literature and sample.*

**HART & COOLEY MANUFACTURING CO.**  
HOLLAND, MICH. • PHILADELPHIA OFFICE: 1600 ARCH ST.

# CHRYSLER AIRTEMP



A PART OF THE FURNACE ASSEMBLY AT CHRYSLER AIRTEMP

## Mass Production... Low Cost

The engineering and production experience of Chrysler Corporation is reflected in the complete line of Chrysler Airtemp Heating, "Packaged" Air Conditioning, and Commercial Refrigeration. With modern mass production methods, proven designs, and a background of performance, Chrysler Airtemp is in a position to offer the American public better products at lower cost.

The Chrysler Airtemp Triple Line... Heating, Cooling and Commercial Refrigeration... offers heating dealers an opportunity for 12 months' profitable operation. Direct dealer contracts will be available for just the Chrysler Airtemp heating line—or for heating in combination with air conditioning or commercial refrigeration—or for all three lines. • Airtemp Division of Chrysler Corporation, Dayton 1, Ohio.



### THE 4 FUNDAMENTALS OF CHRYSLER AIRTEMP DEALER OPERATIONS

1. Engineered Installation
2. Proper Display
3. Outside Selling
4. Customer Service



Buy More War Bonds! Tune in Major Bowes every Thursday, CBS, 9 p. m., E. W. T.

HEATING • COOLING • REFRIGERATION

**In every community you will find one or more "key" dealers. They're not necessarily the largest dealers — but, they are the alert, progressive, live-wire dealers — the men who are working and planning today for a more prosperous tomorrow. They are the dealers whom every heating manufacturer would like to have.**

Here at Premier we feel proud because so many of these "key" dealers are Premier dealers . . . we are proud that we had a part in their past success . . . and, we are proud that they are relying upon us to help them achieve still greater success in the future.

We are determined too, that when tomorrow dawns, we will keep faith with all of our dealers, by giving them a still finer, more complete PREMIER line . . . by giving them still more factory assistance with their engineering and merchandising problems.

**Also:**  
**COOLING EQUIPMENT**  
**REGISTERS**  
**DUCTWORK**  
**AUTOMATIC CONTROLS**

**PREMIER FURNACE COMPANY**  
 DOWAGIAC, MICHIGAN

# PREMIER

**The Year 'Round Line**

## *New Literature*

For your convenience in obtaining copies of New Literature use the coupon on this page.

### 125—Kwikflux—Hard Soldering Flux

Special Chemicals Co., 30 Irving Place, New York 3, N. Y., is distributing a two-page folder telling the advantages of Kwikflux for brazing, soldering and welding apparatus, manual or automatic.

### 126—Klondike Arc Welders

Ralph Fern, 2517 Boulevard Ave., Scranton 9, Pa., is distributing a folder illustrating and describing the Klondike a. c. arc welders (combination welder and thawer). Several models are specified, with prices, and there is a price list of weld rod and accessories with prices.

### 127—New Data on Maintenance Welding

Eutectic Welding Alloys Company, 40 Worth street, New York, 13, N. Y., announces a six-page folder on their Low Temperature welding rods, concentrating on the problems which concern maintenance.

The new EutecRods can be used with any oxyacetylene torch or arc equipment.

The new folder describes Eutectic's procedures fully, in which their rods, applied at low temperatures to cast iron, steel, aluminum, bronze, etc., produce clean, strong bonds yet leave the welded part easily machinable. The strength of the machined part is unimpaired and no distortion has occurred. There are many suggestions for salvaging parts which were thought ready for the junk pile . . . and putting them to work again.

### 128—Techniques of Soldering

The Jam Handy Organization, 2821 E. Grand Blvd., Detroit, has made available to the metal and allied trades a new discussion type training slidefilm on soldering. This film has been widely and successfully used in wartime aviation industries, and in the armed services. It has a total of 92 individual teaching pictures, arranged in logical sequence, to help train apprentices and students in the purposes, methods, equipment and materials of modern soldering. Each picture is a special photograph, drawing diagram or other pictorial device with letterings, legends and labels superimposed on the film and projected with the visual material. Each sequence may be used as basic training material for a single session or lesson, or the entire film may be so used. Sequences are as follows: Definition of solder, uses, soldering methods, fluxes, types, applications, heat sources for soldering, the bit, steps in soldering, preparing the bit, soldering cables, terminals, taps and splices, soldering sheet metal, safety precautions.

#### FOR YOUR CONVENIENCE

American Artisan, 6 N. Michigan Ave.  
 Chicago 2, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "New Products" and "New Literature." (Circle numbers in which you are interested):

|     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|
| 10  | 11  | 12  | 13  | 14  | 15  | 16  |
| 17  | 18  | 19  | 20  | 21  |     |     |
| 110 | 111 | 112 | 113 | 114 | 115 | 116 |
| 119 | 120 | 121 | 122 | 123 | 124 | 125 |
| 128 |     |     |     |     |     |     |

Name . . . . .  
 Company . . . . .  
 Address . . . . .

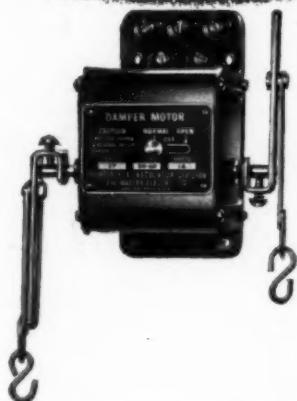
Are you Manufacturer — Jobber — Dealer —

# PIONEER TEMPERATURE CONTROL SYSTEMS

## Easy to install - Inexpensive

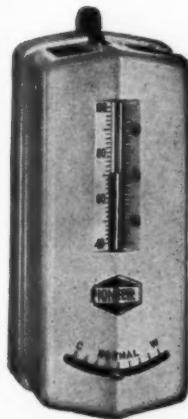
### INVESTIGATE this simple, efficient system\*

a profitable way to provide the convenience and comfort of automatic temperature control for solid fuel heating plants



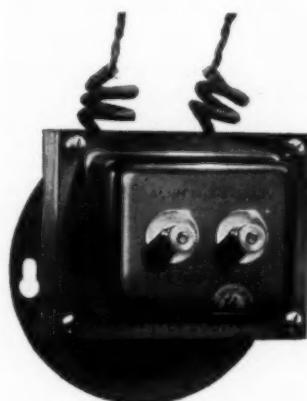
#### DAMPER MOTOR

Closes and opens the dampers quietly and dependably



#### ROOM THERMOSTAT

The little red light tells when the heat is on



#### TRANS-FORMER

Underwriter Approved—steps current down to low voltage for safety. Short circuit proof



#### IN ONE PACKAGE

Everything comes to you in a single package with all necessary wires, chains and fittings ready to install.

\* Various types of safety limit control and time switches are available if desired.

# PIONEER

CONTROLS

THE MASTER ELECTRIC CO.  
Aircraft and Electrical Controls Division  
DAYTON 1, OHIO



# Profit\$ for You!

**More Warmth and Fuel Economy for Your Space Heater Customers**



**A-P Thermostatic Temperature Controls are Designed for ALL Oil-Burning Space Heaters Using A-P Model 240-DR or UR Manual Controls . . .**

**Oil-burning space heater users** need your guidance to get more heat and comfort from their fuel oil allotment — avoid fuel waste and overheating, prevent cold homes in the early spring.

**Contact all your space heater customers** — win their continued patronage and friendship by suggesting an A-P Thermostatic Control Set for their present heater to conserve oil.

## **SELL THIS COMPLETE SALES PACKAGE — EASILY INSTALLED**

**The A-P Thermostatic Temperature Control Set** is a complete sales package — including an Electric Conversion Top, accurate wall thermostat, transformer, wiring, staples and full instructions. Returns more than its cost in fuel savings and positive comfort — easy to install.

**NOW is the time** to get behind this vital and profitable sales promotion. Ask for bulletin and prices on A-P Thermostatic Heat Regulator Set No. 240-ED.

**AUTOMATIC PRODUCTS COMPANY**

2460 N. THIRTY-SECOND STREET • MILWAUKEE 10, WIS.



**DEPENDABLE  
OIL CONTROLS**

## *With the Manufacturers*

### **Payne Merges with Dresser Industries**

Change of name of the 30-year-old Payne Furnace & Supply Co., Inc., of Beverly Hills, Calif., to Payne Furnace Company, is announced in connection with the recent acquisition of assets by Dresser Industries, Inc., in a joint statement issued by H. N. Mallon, president of Dresser and E. L. Payne, president of the Payne Company.

"Payneheat" will operate as a separate unit of the Dresser Industries, continuing to manufacture the long-established Payne models; and no changes in management or general policies are anticipated.

The merger with the Dresser Industries will enable Payne to amplify its facilities and resources and expedite the exchange of technical and research information.

To succeed the late Charles S. Trott, the Parker-Kalon Corporation, New York City, makers of Fastening Devices, has appointed S. S. Kahn, sales and advertising manager of the company.

Mr. Kahn has been assistant sales manager for fifteen years. No change in sales or advertising policies is contemplated.



**S. S. Kahn**

Front Rank Furnace Company, Division of Liberty Foundry Company, 500 Ohio avenue, St. Louis 4, announces with profound sorrow the death of Norman C. Grosse, a member of the sales organization, Sunday, February 11, 1945, at the Veterans Hospital, after a brief illness.

A veteran of World War II, Mr. Grosse joined the Front Rank organization shortly after Armistice Day. He is survived by his widow, the former Miss Otilie Lohmueler, and his mother.



**Daniel Polak**

Viking Air Conditioning Corporation, 5600 Walworth Avenue, Cleveland, Ohio, has appointed its first foreign distribution representative.

At a recent meeting in Cleveland, President Marion I. Levy named the San Francisco export and import firm of Polak, Winters & Co. to represent Viking in South and Central America and the Pacific Areas of the Philippines, Dutch East Indies, China and India. Daniel Polak represented his firm at the meeting.

W. P. Zimmerman, vice president of Owens-Corning Fiberglas Corporation of Toledo, Ohio, announces changes in branch personnel:

Frank L. Myers, Chicago branch manager will join the general sales organization and will be engaged on special assignments in the field of thermal insulation, adapting standard Fiberglas products to new applications. Mr. Myers will be on the staff of J. H. Thomas, general sales manager.

Ben S. Wright, since November, 1940, manager of the Fiberglas Fabrics Division in the Toledo general offices, has been transferred to Cleveland as manager of the branch at 825 Hanna Building.

W. H. Atkinson, former Cleveland branch manager, becomes manager of the Fiberglas Corporation's Chicago branch office, 3206 Pure Oil Building.

Earl Swaim, formerly Buffalo branch manager, returns to the Toledo general offices where he will be associated with G. E. Gregory, vice president in charge of commercial development.



Illustration from Bryant national advertisement

## SO YOU WANT TO MAKE FRIENDS?

Sell what other people want if you want to make friends, they say. And note that Mr. and Mrs. America have announced a decided preference for gas heating in their postwar homes.

Bryant will make it possible for you to provide whatever the postwar prospect desires in gas heating. As always, there will be quality equipment with cast-iron heating sections that hold down maintenance costs. There will be equipment for heating every type of home from modest

bungalow right up the scale. Bryant believes that people in every walk of life are entitled to enjoy the advantages of automatic gas heating—and intends to make it attainable with improved, modern features.

Some early tomorrow, we hope to tell you the whole story of the Bryant postwar line. Rest assured, it will be equipment to help you make friends . . . and sales!

THE BRYANT HEATER CO., CLEVELAND, OHIO  
*One of the Dresser Industries*

LET THE PUP BE FURNACE MAN



CHECK THE FACTS

AND YOU'LL FIND ...

NEARLY  
\$5,000,000  
HAS ALREADY BEEN  
SPENT ADVERTISING  
OIL-O-MATIC

The fact that nearly \$5,000,000 has *already been spent* advertising Williams Oil-O-Matic heating equipment puts Oil-O-Matic dealers in an enviable position. Here's why:

1. Because of advertising already done, *more* people will think of Oil-O-Matic *first* when they come to select their postwar heating equipment.
2. This powerful advertising is one reason why Oil-O-Matic has outsold all other makes of automatic heating equipment.
3. Such sales leadership means that Oil-O-Matic is widely and solidly established, with thousands of satisfied owners whose endorsements will help make new sales.
4. To protect this \$5,000,000 investment, Williams must and will continue to support its dealers with forceful, continuous Oil-O-Matic advertising.

Past performance is a good indication of future accomplishment. Consider this fact in evaluating postwar promises.

For the *fourth time*, Williams employees have won the Army-Navy Award . . . proof of their continued excellence



in producing difficult precision-built war materials.



WILLIE O-MATIC says:  
"War Bonds are the  
world's best investment.  
Buy all you can as often as  
you can—and keep them!"

COPR. 1945. WILLIAMS OIL-O-MATIC HEATING CORP.

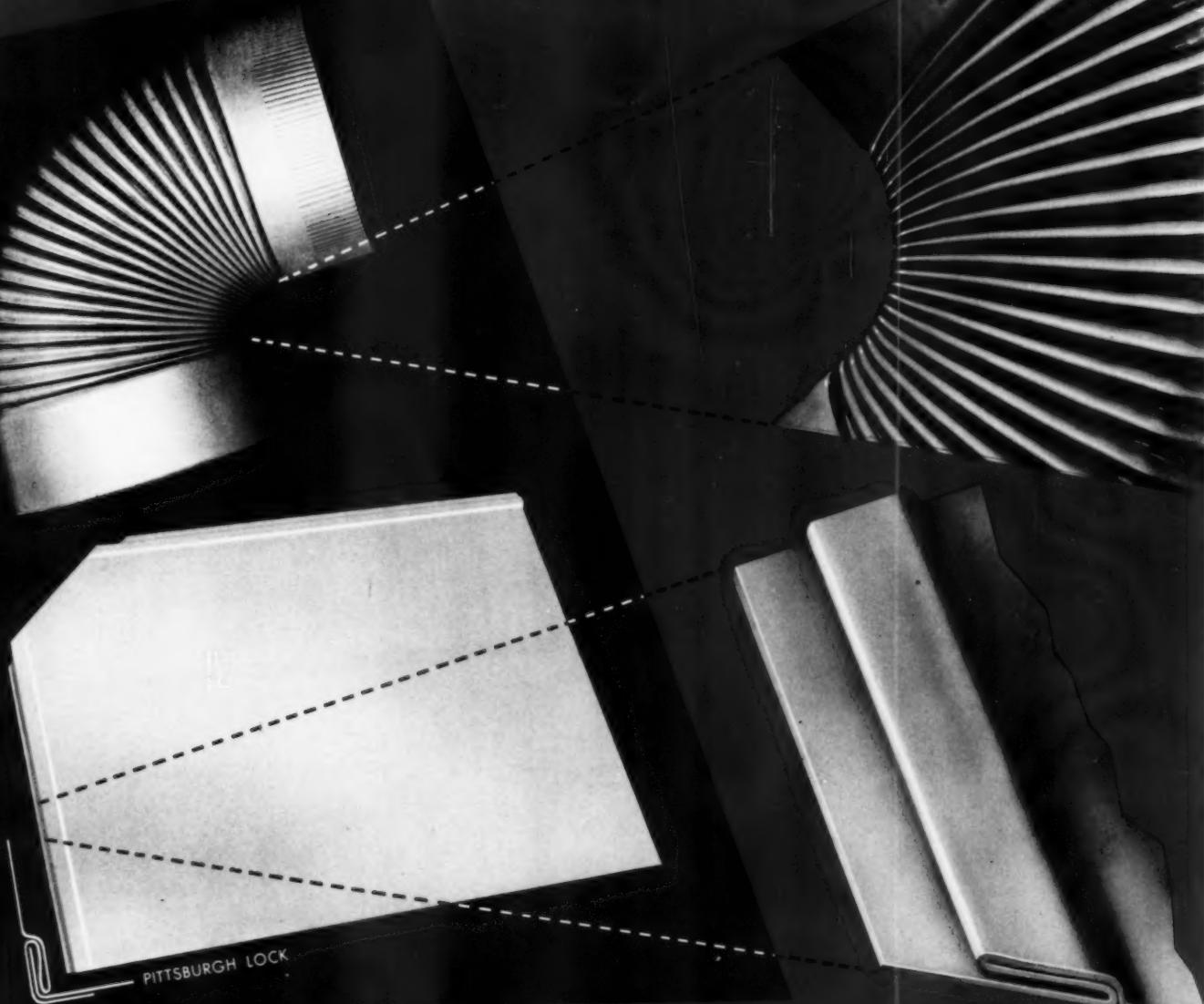
WILLIAMS  
OIL-O-MATIC  
HEATING

WILLIAMS OIL-O-MATIC HEATING CORPORATION • BLOOMINGTON, ILLINOIS

# Weirzin

ELECTROLYTIC ZINC COATED SHEETS AND STRIP

takes it easy...



- **A highly ductile steel base and a coating that sticks with it**

If peeling, flaking, rusting are among your product problems—try a test sample of Weirzin. Weirzin consistently demonstrates a much higher fabricating efficiency and a remarkable resistance to heat and moisture.

Weirzin electrolytic zinc coated sheet and strip is available in coils or cut lengths from  $\frac{1}{8}$  to 35" widths. Write for sample and technical booklet. Learn the definite business advantages of this revolutionary new material.

**WEIRTON**



**STEEL CO.**

WEIRTON, W. VA. Sales Offices in Principal Cities  
Division of NATIONAL STEEL CORPORATION Executive Offices, Pittsburgh, Pa.



# NOW, Complete Your Merchandising Setup with Combustioneer—the Wanted, Eye-Appealing Stoker



Sell the Type of Automatic Heat that Saves Up to 50% of the Cost of Heating with Other Fuels

## THE MODERN ECONOMICAL HOME AUTOMATIC HEATING SYSTEM

Combustioneer is bringing the luxury of uniform heat to hundreds of thousands of homes through automatically controlled uniform temperatures around the clock, without smoke or dirt; and *so much more heat* for the money that *it pays for itself* in the long run.

## COMMERCIAL MODELS BRING BIG PROFITS

Combustioneer dealers are now selling industrial plants, business establishments, commercial buildings, the dollar saving services of Combustioneer in *drastically reducing fuel cost*, *increasing the output* of existing boilers and maintaining closely held temperatures automatically with less labor and supervision time.

## THOUSANDS OF HOME AND COMMERCIAL INSTALLATIONS

Backed by 28 years of continuing design, engineering and manufacturing leadership, and precision-made from laboratory control to final tests in one modern plant, Combustioneer is a prime and salable product, whose dependability has been proved by thousands of installations in homes, industrial plants, business buildings, schools and churches.

## WHY COMBUSTIONEER IS FIRST CHOICE AMONG DEALERS

Now is the time to find out what Combustioneer dealers say about their success with Combustioneer. Now also is the time to get complete details about a franchise that permits you to start making sales today, thereby getting immediate profits, and that gives you a profitable line to fit perfectly into your post-war merchandising setup.

## A COMBUSTIONEER AUTOMATIC STOKER BELONGS IN YOUR MERCHANDISING SETUP BECAUSE:

- 1 Wartime curtailments and limitations of other fuels have given automatic coal burning a tremendous impetus.
- 2 People want home comfort devices after the war and Combustioneer is one of the greatest contributions to home comfort and efficiency.
- 3 Combustioneer gives *more comfort* in the home and takes *less money* out.
- 4 Combustioneer is the right stoker for dealers to sell, according to a survey among dealers as to the 5 factors of successful selling.
- 5 Combustioneer has the advertising promotional plans, display materials and presentation materials which make it easier to sell.
- 6 *And Combustioneer Models are being sold by dealers today.*

## EXCLUSIVE FEATURES AND THE ADVERTISING TO HELP MAKE THEIR SALE EASY

Combustioneer's precision built mechanism is fortified with exclusive patented features, including the famous Breathing Fuel Bed, Automatic Respirator, Safety Clutch and many others, which make it easy to sell with the help of Combustioneer's complete visual presentation materials. All this is supported by Combustioneer's continuous national advertising, effective localized advertising campaigns, sales making literature and mat service, regular promotional plans, window and store display materials and comprehensive sales and service manuals.



# Combustioneer

AUTOMATIC COAL BURNER

THE STEEL PRODUCTS ENGINEERING CO.

SPRINGFIELD, OHIO

Designers, Engineers and Manufacturers of Precision Products Equipment

KEEP ON BUYING WAR BONDS

# Smoke Shortage?

## KRESKY STARTED ONE 35 YEARS AGO!

There's more than a shortage of smoke—there's a complete lack of it when any oil burning appliance is equipped with a Kresky Oil Burner.

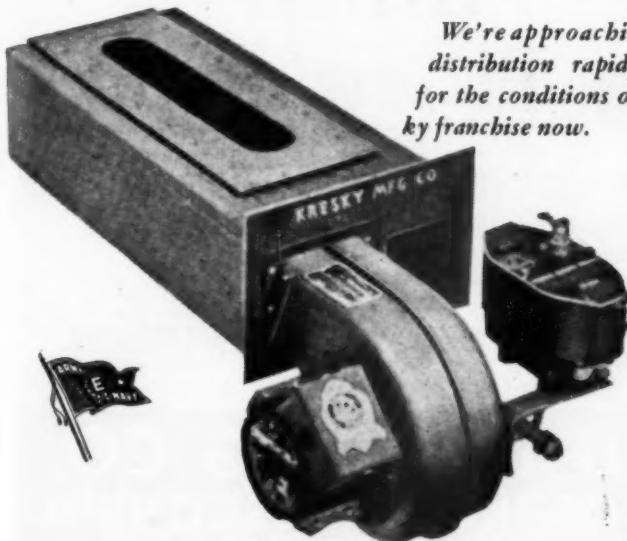
Kresky pioneered in producing mechanical induction of air nearly forty years ago. And with their patented burner design, they have remained first in smoke-free, soot-free, high-heat oil combustion.

### WIDE FIELD FOR KRESKY DISTRIBUTORS

You get the advantages of Kresky leadership in a full line of Floor Heaters, Space Heaters, Water Heaters and Basement Furnaces. In every model of all these appliances you have strong selling points that are exclusive with Kresky.

Widening your market still further are the possibilities in Kresky Conversion Burners. They are adaptable to Stoves, Ranges, Heaters, Furnaces, Hot Water Heaters, Bake Ovens, Steam Boilers, Hot Water Boilers, Press Boilers, Candy Kettles, Doughnut Kettles, Melting Furnaces, Vulcanizing Machines and many others.

*We're approaching civilian distribution rapidly. Write for the conditions of a Kresky franchise now.*



**KRESKY  
MANUFACTURING CO.**

★  
Pioneers in Oil  
Burning Equipment  
Since 1910

★  
PETALUMA  
CALIFORNIA

## With the Manufacturers



Fred C. Wood

Fred C. Wood has been appointed manager of the Washington National Service Office of the York Corporation of York, Pa., J. S. Tweedell, general sales manager, has announced. Mr. Wood will fill the vacancy left by Rodney F. Lauer who has been named district manager of the company's operations with headquarters in Los Angeles.

Three new men have been added to the stoker division of the A. O. Smith Corp. as part of the organization's rapidly expanding stoker distribution program, officials of the company announce in Milwaukee.

The three men are T. O. Lawler, who becomes eastern stoker sales manager, and R. H. Stuff and H. H. Johns Jr., who have joined the north central district as regional sales managers, with offices at 310 S. Michigan Ave., Chicago.

Lawler's headquarters will be in the A. O. Smith New York district office at 155 E. 44th St.

Front Rank Furnace Company, 2500 Ohio Avenue, St. Louis 4, announces that Arthur N. Fath of Webster Groves, a St. Louis suburb, has been appointed sales engineer for Missouri and Illinois.

Mr. Fath joined the Front Rank Division of Liberty Foundry Company in 1936 at the time of their taking over Symonds Register Company.

### \$250,000 Fire Sweeps Peerless Plant

The block-long Peerless Foundry Company at 1853 Ludlow Avenue, Indianapolis, was swept by a two-alarm fire early afternoon, February 21, with loss estimated at \$250,000.

Battling the blaze was made extremely hazardous as furnaces stored on the second floor dropped intermittently to the ground floor while the roaring flames consumed the structure. Finally the entire roof collapsed as the heat twisted supporting girders.

An official, who gave the estimate on the fire damage, revealed that the machine shop, warehouse, office, steel furnace division and sheet metal fitting departments were destroyed. Most of the ledgers, books and office records were lost. Part of the foundry was saved. However, the company expects to be back into production on furnaces and repair parts by March 12th, fitting production to start shortly thereafter. Temporary offices have been set up at 1902 Ludlow Avenue.

Frank M. Mutz is president of the company and Harold W. Mutz is vice president.

R. C. Ingersoll, president of Ingersoll Steel & Disc Division, Borg-Warner Corp., 310 S. Michigan Ave., Chicago, announces that Roland D. Doane has been named general sales manager, with headquarters in Chicago.

Doane joined Ingersoll in 1939 to handle the company's sun screen sales and merchandising. Expedition of war contracts will continue to be Doane's responsibility, but his appointment points to early manufacture of sun screens and other peacetime products at the war's end. In post war production, a new type window sash and storm window will be added to Ingersoll's home equipment line, it is understood.



Roland D. Doane

If you are developing new post-war fans, blowers, or other air conditioning equipment—it will pay you to investigate

**TRIANGLE**  
BEARINGS

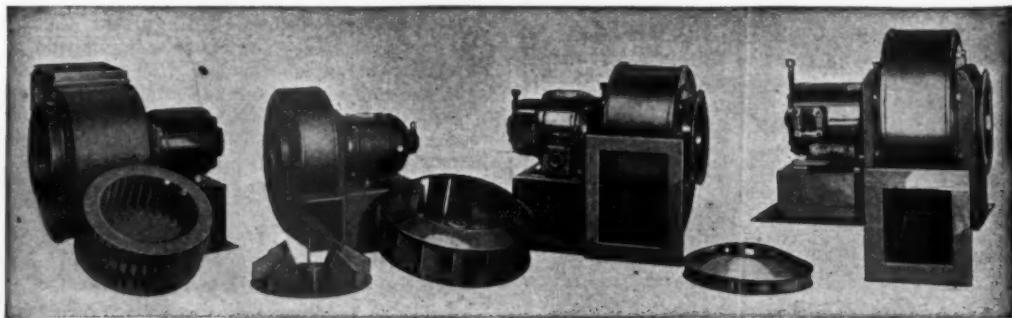
## Shock-Absorbing Pillow Blocks

They are silent—vibrationless—self-lubricated—scientifically streamlined for compactness, simplicity, strength and minimum obstruction to air flow.

*Write for samples and complete information*

**TRIANGLE MANUFACTURING CO.**  
**392 DIVISION STREET OSHKOSH, WISCONSIN**

Johnson **FANS AND BLOWERS** *improved by continuous research*



★ Johnson Health-aire Propeller Fans and Blowers of various types are now available for industrial and commercial users. And back of every one of these products is the cumulative "know-how" growing out of more than twenty-five years of constant research, experiment, improvement, perfection. New units were created and added to the expanding line to keep pace with every modern requirement. Johnson engineers have solved literally thousands of ventilating and air-handling problems—their counsel is available to you at all times to help produce "climate as you like it."

\*BLOWERS (above) available from 6" to 50".

**JOHNSON FAN & BLOWER CORP. • 1319 W. Lake Street, Chicago, 7, Illinois**

**SAVE TIME—  
STEP UP PROFITS  
WITH Follansbee  
SEAMLESS TERNE ROLL ROOFING**

Furnished in **50** Foot Rolls  
—without seams

Follansbee Seamless Terne Roll Roofing eliminates cross-seaming, saves lots of time. It's easy to cut to lengths required—right on the job. No camber, edges are uniformly straight, no trimming required.

**CARRIED IN STOCK  
by Leading Distributors**

**FOLLANSBEE STEEL CORPORATION**

GENERAL OFFICES • PITTSBURGH 30, PA.

Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee.

Sales Agents—Chicago, Indianapolis, St. Louis, Nashville, Houston, Los Angeles, San Francisco, Seattle; Toronto and Montreal, Canada.

Plants—Follansbee, W. Va. and Toronto, Ohio.

ALLOY BLOOMS & BILLETS, SHEETS & STRIP • CLAD METALS  
COLD ROLLED CARBON SHEETS & STRIP • POLISHED BLUE SHEETS  
ELECTRICAL SHEETS & STRIP • SEAMLESS TERNE ROLL ROOFING



# WHITNEY

## LEVER PUNCHES

No. 4B PUNCH



Length 8 1/2 inches. Capacity 1/4-inch through 16 gauge. Deep Throat—2 inches. Weight—3 pounds. Punches and Dies—1/16" to 9/32" by 64ths.

No. 6 PUNCH



Length—20 1/2 inches. Capacity—1/4-inch hole through 8/16-inch iron; especially adapted for button punching or template work. Punches and dies 1/8" to 9/32" by 32nds.

No. 91 PUNCH



**CAPACITY**  
1/8-inch hole through 3/16-inch iron; 5/16-inch hole through 2/16-inch iron; 2-inch hole through 1/2-inch iron. Depth throat, 5 inches. Weight, 82 lbs.

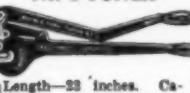
We have tools for every purpose needed by Sheet Metal Contractors.  
Ask your Jobber

No. 1 PUNCH



Length—94 inches. Capacity—5/16-inch hole through 1/4-inch iron. Punches and dies in sizes from 1/8" to 9/16 by 64ths.

No. 2 PUNCH



Length—23 inches. Capacity—5/16-inch hole through 1/4-inch iron. Punches and dies in sizes 8/32" to 5/8-inch by 64ths.

CHANNEL IRON PUNCH



Companion to No. 2 Punch. Every part of the two Punches Interchangeable, including punches and dies. Capacity—1/4-inch hole through 1/4-inch iron.

## With the Manufacturers

Minneapolis-Honeywell Regulator Co., 2753—4th Ave. So., Minneapolis 8, announces formation of a new sales zone, with headquarters in Houston, Texas.

The zone will encompass the territory in the Southwest formerly under jurisdiction of the Atlanta zone and will maintain offices in Houston, Dallas, Tulsa and New Orleans.

Robert Mallory, formerly branch manager of the Houston office, has been named as manager for the new Southwestern Zone.

Paul B. Sagar has been appointed Eastern Field Engineer for General Controls Co., Glendale, California. Working out of the Cleveland Factory Branch, 3224 Euclid Avenue, Mr. Sagar will devote the major part of his time collaborating with Eastern appliance manufacturers in working out problems of application and assisting them in test procedures at the American Gas Association Laboratory.



Paul B. Sagar

C. Allen Fisk has joined the Williams Oil-O-Matic Heating Corporation, Bloomington, Illinois, as divisional manager for New England with headquarters in Boston, W. A. Matheson, President, has announced.

Mr. Fisk brings more than 20 years of intensive sales experience in the oil burner industry as a dealer, retail sales manager, and wholesale factory representative. He will operate under the direction of C. W. Cornelssen, recently appointed manager of heating sales.



C. Allen Fisk



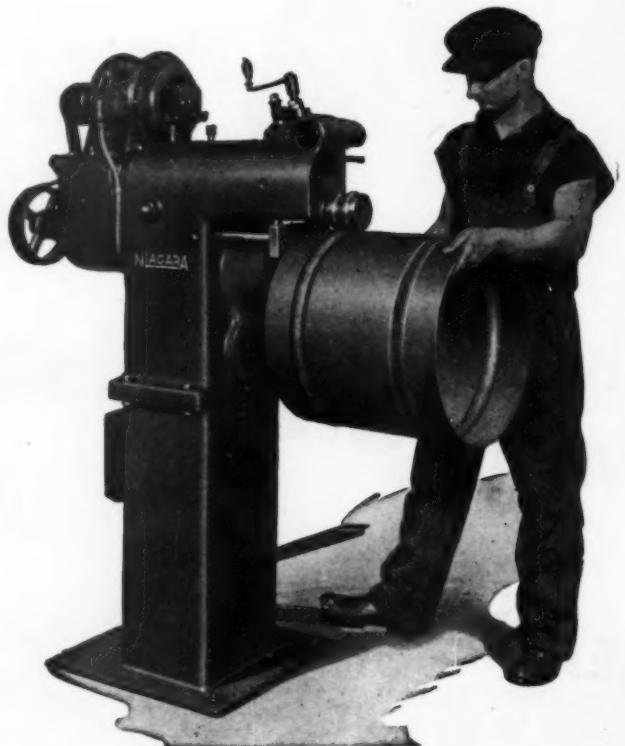
This motor driven combination machine with interchangeable rolls combines power operation, ability to handle heavy gage work, and easy operation.

Foot control of clutch and upper roll allows the use of both hands for holding and guiding the work.

Interchangeable rolls make one machine capable of burring, turning, wiring, beading, crimping, flanging, slitting and circle cutting. Beading and crimping can be done in one operation.

Gears and shafts are enclosed. Gear box contains intermediate gears and clutch, all running in oil. Clutch gives instant hand and foot control and can be locked for continuous operation.

Write for Bulletin 75A. NIAGARA MACHINE & TOOL WORKS, Buffalo, N. Y. District Offices: Detroit, Cleveland, New York.

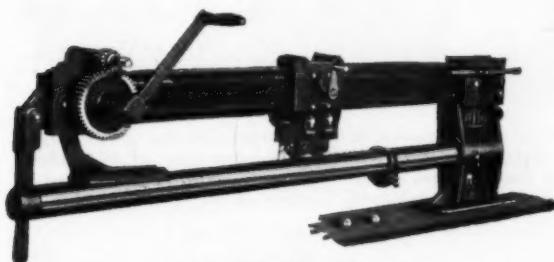


# STEPPING-UP WAR WORK on all INDUSTRIAL FRONTS



FOLDER AND BRAKE

... working Sheet Metal into the thousands of finished forms that are required by the Services . . . repairing battle-damaged material on the fighting fronts . . . PEXTO machines and tools have had a top rating for 160 years.



GROOVING MACHINES  
HAND AND POWER



THE PECK, STOW & WILCOX COMPANY Since 1785 SOUTHBURY, CONNECTICUT, U. S. A.

## INDEPENDENT Baseboard Registers Two-Piece, with removable grille—adjustable fins

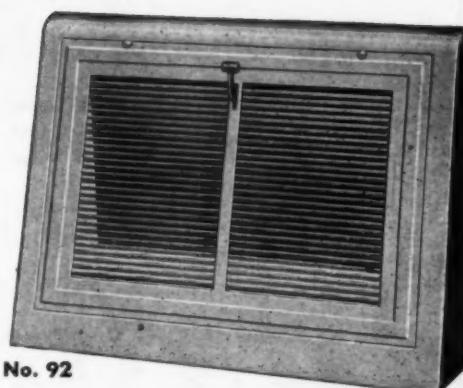
Always Leading  
Always Progressing



• This No. 92 register is a leader in Independent's extensive line of registers, cold air faces and grilles. Fins, regularly set to deflect air flow slightly upward, are easily bendable to direct air flow straight outward or downward as required. Scientific design affords large open area with minimum air resistance.

We welcome inquiries for present needs. When Victory comes, you can depend upon Independent quality and variety for all requirements of registers, cold air faces and grilles for air conditioning and warm air heating—backed by more than 46 years of leadership.

*Send for Catalog 41-G.*



No. 92

### THE INDEPENDENT REGISTER CO.

3747 EAST 93RD STREET, CLEVELAND, OHIO

**NOW AVAILABLE  
ON PROPERLY  
RATED ORDERS**



**BLOWER-  
FILTER  
UNITS**

•  
**for Low Cost  
Winter Air  
Conditioning  
You Can Sell  
at a Good  
PROFIT!**

Though still engaged in war production, we can supply, on deferred deliveries, limited quantities of REX AIR-PAK Blower-Filter Units. Complete data as to sizes and ratings will be promptly mailed on request.



PIONEER PROPELLOR FAN AND BLOWER MANUFACTURERS  
2310 Superior Avenue Cleveland 14, Ohio

*With the Manufacturers*

General Controls Co., Glendale, California, announces the appointment of James King as Field Sales Engineer in their New York Factory Branch, 101 Park Avenue. Mr. King will serve users of automatic controls, particularly in industrial fields, throughout Metropolitan New York.



James King

J. Howard Riddle, who has been in charge of Milcor Steel Company's Rochester Branch since 1938, has been assigned new duties in connection with special sales work. He will remain in Rochester and his services on merchandising problems will be available to the trade.

Frank C. Raschka has been appointed Manager of the Rochester Branch.

W. A. Matheson, President of Williams Oil-O-Matic Heating Corporation, Bloomington, Illinois, has announced the appointment of E. H. Davison as Assistant Manager of Heating Sales.

Mr. Davison has had more than 22 years experience in the oil burner industry. He joined Williams Oil-O-Matic Heating Corporation in 1923 as District Representative in New England and has been connected with the sales department ever since—with the exception of 5 years in Radio with the National Broadcasting Company. He has been Regional Manager since 1941.



E. H. Davison

**USE ONLY ORIGINAL  
REPAIR PARTS**

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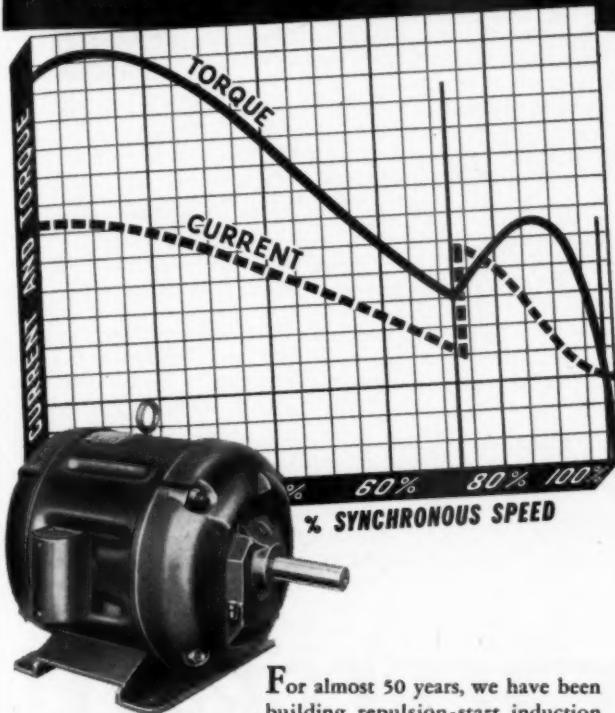
ORDER ALL REPAIRS FOR  
**WISE FURNACES**  
DIRECT FROM  
**THE WISE FURNACE CO.**  
**AKRON, OHIO**



Now in Our 41st Year of  
serving our customers faithfully and satisfactorily



For Those Hard-to-start Jobs-  
use **Wagner**  
Repulsion-Start Induction Motors



For almost 50 years, we have been building repulsion-start induction motors, and today the majority of fractional-horsepower motors we make are still of the same type.

Notwithstanding the development of other types of single-phase motors during all those years, the repulsion-start induction type is still the preferred motor for compressors, pumps, stokers, and other machinery involving heavy starting-loads—because repulsion-start induction motors

1. start high-inertia loads and accelerate them smoothly.
2. have lower starting-current than any other type of single-phase motors—light flicker is negligible when motors start.
3. have high operating speeds even under considerable overloads, and
4. have a flat efficiency curve over a wide operating range.

For complete description of Wagner repulsion-start induction motors, ask for Bulletin MU-183 or write the nearest of our 29 branch offices, at Atlanta 3, Baltimore 18, Boston 15, Buffalo 8, Chicago 16, Cincinnati 10, Cleveland 15, Dallas 1, Denver 2, Detroit 2, Houston 2, Indianapolis 4, Kansas City 8, Los Angeles 15, Memphis 3, Milwaukee 2, Minneapolis 4, New York 7, Omaha 2, Philadelphia 8, Pittsburgh 13, Portland 9, St. Louis 3, Salt Lake City 1, San Francisco 3, Seattle 4, Syracuse 2, Tulsa 3, and Washington 5.

M45-38

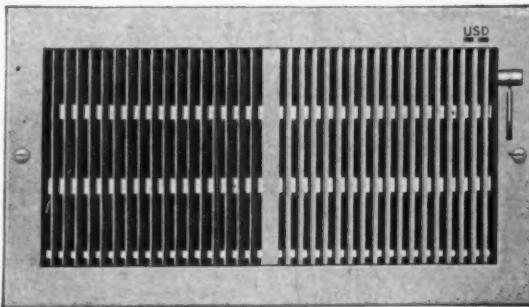
**Wagner Electric Corporation**  
ESTABLISHED 1891  
6371 Plymouth Avenue, St. Louis 14, Mo., U. S. A.  
ELECTRICAL AND AUTOMOTIVE PRODUCTS



Here is a simple, sturdy, economical air conditioning register with *complete* air control.

Auer Airo-Flex Registers provide effective 4-way directional flow. Multi-louvre back blades control up-and-down flow, and indicator on face shows position of blades. Vertical grille bars are easily adjustable for straight or sideway deflection with turning tool. The Airo-Flex design has all adjustable features of many higher priced registers. Furnished for wall or baseboard use with matching intake.

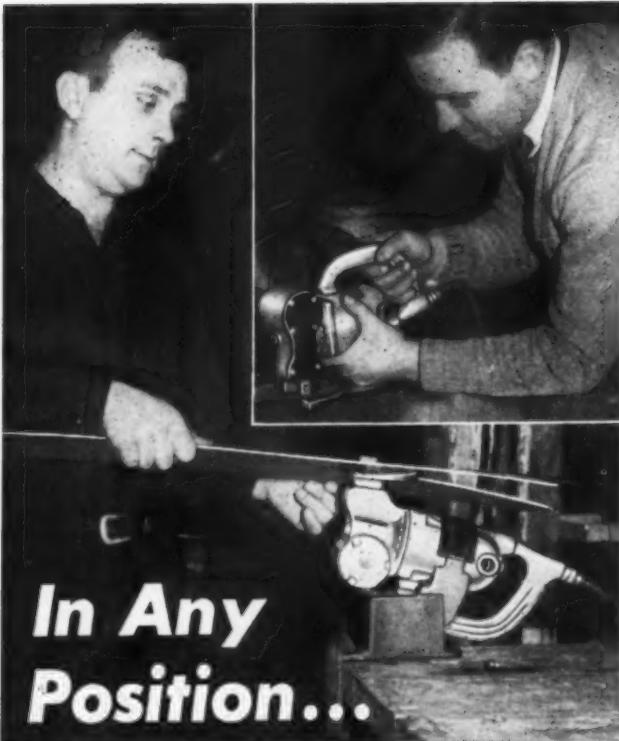
Many other types of Auer registers for both air conditioning and gravity systems shown in Auer Register Book, sent on request. For flat stamped metal grilles, ask for catalog "G".



No. 4432

THE AUER REGISTER COMPANY  
3608 Payne Avenue Cleveland 14, O.

**AUER  
REGISTERS  
& GRILLES**  
For Air Conditioning and Gravity



**In Any Position...**

## Your UNISHEAR is Profit-Side Up!

Grasp this light, well-balanced Unishear and use it like a hand shear — cut through metal at a speed of 15-20 feet per minute as fed — follow straight lines, curves, angles, notches and inside shapes with hairline accuracy. Clamp it, cutter side up, in a Stanley Cradle and you have a sturdy, speedy bench shear. This makes the portable Stanley Unishear a profit tool anywhere in the shop!

Stanley Unishear No. 214, shown in use, has a capacity up to 14 gauge hot rolled steel, and softer metals in heavier gauges. Other portable models in sizes to cut 18, 16, 12 or 8 gauge hot rolled steel. Stationary models handle metal up to 10 gauge. Write for illustrated folder. Stanley Electric Tools, New Britain, Connecticut.

**STANLEY**

**STANLEY UNISHEARS**  
THE ELECTRICALLY DRIVEN HAND SHEARS

## With the Manufacturers . . .

General Controls Company, Glendale, California, announces the appointment of Joseph W. Wilson as Manager of the Glendale Branch Office. Wilson served as heating engineer for the Holland Furnace Company for 15 years and as manager of several Holland branches. He was also, for a time, Sales Engineer and later Production Manager of the Kinney Aluminum Company. As Manager of General Controls' local Branch, Wilson will devote his entire time to serving users of automatic controls in the heating, refrigeration, aircraft and industrial fields throughout the Southern California, Arizona and Southern New Mexico area.



J. W. Wilson

Burton L. Wolff, vice president of Benjamin Wolff and Company, Chicago steel warehouse, announces the addition of Donald MacArthur to the Wisconsin sales staff of the Wolff organization. Mr. MacArthur has made many friends among Wisconsin sheet metal users during his previous ten year association with Gibbs Steel Company.

Mr. MacArthur will work under Ray Baker from the Milwaukee office of the company at 176 West Wisconsin Avenue—Room 900 of the Bartlett Building.

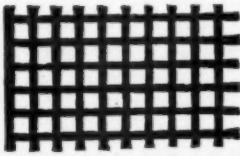
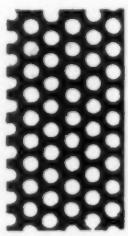
Inland Steel Company, Chicago, announces the establishment of an Indianapolis, Indiana, District Sales Office and the appointment of Norbert E. Smith as District Sales Manager, located in Suite 831-3, Architects & Builders Building, 333 N. Pennsylvania Street.

Mr. Smith has covered Indiana as a representative of the Chicago District Sales Office since 1936. Prior to his Inland affiliation, Mr. Smith traveled Indiana for Joseph T. Ryerson & Son, Inc., an Inland subsidiary.

## PERFORATED METALS ARE ESSENTIAL

### In Times of War and Peace

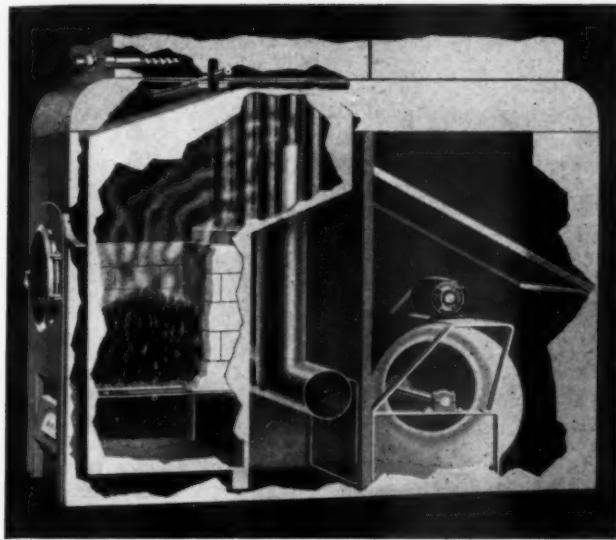
They are used in the manufacture of explosives and ammunition, flame arresters, airplanes, battleships and in many important and essential industries such as the processing of grain, food products, chemicals, metals, coal, petroleum, etc. We make all sizes and shapes of holes to meet the most exacting conditions.



**The Harrington & King Co.**  
PERFORATING

5649 Fillmore St., Chicago 44, Ill. 114 Liberty St., New York 6, N. Y.

*We're Ready!*



For the past three years most of our heating and air-conditioning equipment has been produced for military needs.

But now military commitments have been largely met, and we are building, in limited quantities, J&C (Bertossa) heating and air-conditioning units for civilian use.

Now your customers can enjoy the comfort and efficiency found in J&C equipment which has won the respect of leading engineers and architects.

As a result of additional facilities, we are now in a position to supply a full line of J&C equipment including gravity furnaces from 20 inch size up, and forced-air units ranging in size from 135,000 to 2,800,000 BTU's some models engineered to be fired mechanically with gas, oil, or coal; and others built for economical hand firing.

Our full line including blowers, stokers, and oil burners offers wide market coverage to any dealer.

Your territory may be opened—write or wire us today!

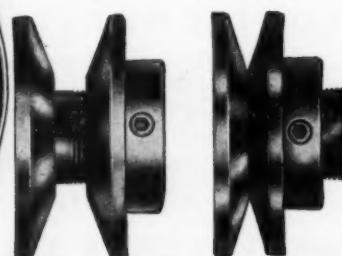
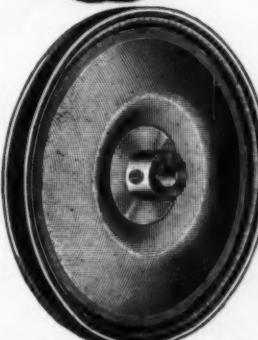


**JACKSON & CHURCH COMPANY**  
SAGINAW, MICHIGAN



## MAUREY V-PULLEYS

**provide a L-O-N-G step toward  
TROUBLE FREE Performance**



**MAUREY  
MANUFACTURING CORP.**

2915 South Webash Avenue  
CHICAGO 16, ILLINOIS

# YOUR BLOWER Requirements

AVAILABLE AT  
Schwitzer-Cummins Company



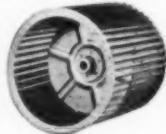
## ★ BLOWERS FOR EVERY PURPOSE

Double Inlet and Single Inlet

HY-DUTY Blowers, 9 3/4" to 25" • Top and Bottom Horizontal, and Top and Bottom Vertical Discharge • Top and Bottom

Motor Mounting • Dual Units also available.

★ CENTER DISC WHEEL—Double Inlet, Double Width • Reinforced Center Disc • Designed for Modern Air Conditioning and Heating Applications • Sizes, 4 1/2" to 50".



★ ENGINEERING DATA—Write for Catalogues showing complete Performance Data • Experienced Engineering Department available to help solve your Air Handling Problems.

BLOWER DIVISION  
SCHWITZER-CUMMINS COMPANY  
1145 EAST 22ND STREET INDIANAPOLIS, U. S. A.

## With the Manufacturers

Minneapolis-Honeywell Regulator Company, Minneapolis 8, announces the appointment of A. H. Lockrae as manager of its Heating Controls Division.

Mr. Lockrae will have charge of the company's activities in the sale of oil burner, stoker and gas controls, and in addition, will supervise sales to wholesalers and dealers, C. B. Sweatt, vice president, stated.

Joining the company in 1927 when the Honeywell Heating Specialties Company merged with the Minneapolis Heat Regulator Company to form the present organization, Mr. Lockrae has been associated with sales and branch office activities until the present time. He moved from Wabash, Indiana, at the time of the merger. The appointment follows the death of John W. Pauling, on January 17.

William Pfaff has been named Works Manager of the Round Oak Company, Dowagiac, Michigan.

Mr. Pfaff comes to Round Oak from the Mullins Manufacturing Company, where he has served in various capacities for 18 years; the last few as plant superintendent.

At Round Oak, Mr. Pfaff will be in charge of all production and engineering activities of the company.



Wm. Pfaff

Robert Santini, associated with Sciaky Brothers, 4915 West 67th Street, Chicago, for the past 12 years, has been appointed district manager of the new Sciaky office, 1775 Broadway, New York City. This office will provide greater resistance welding engineering service to accommodate the growing need in the Northeastern area. Mr. Santini was until recently chief engineer delegated by Sciaky Bros. to Specialty Equipment, 230 Park Avenue, former Sciaky representative in New York.

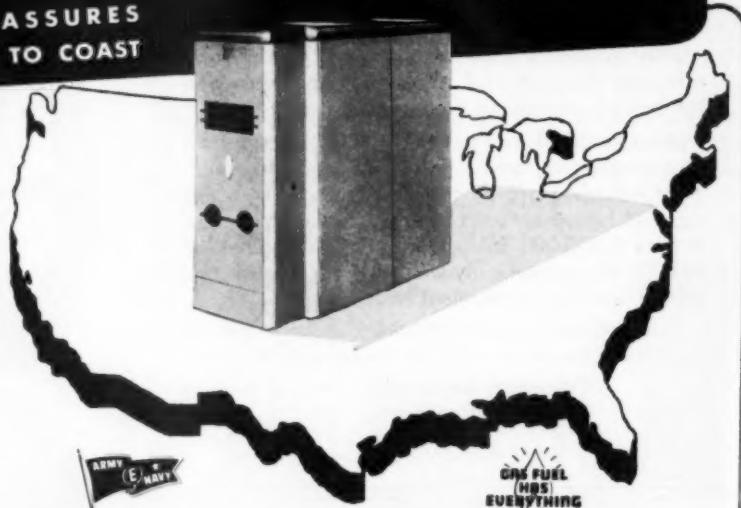
# Payne ZONE AIR

PRE-WAR PERFORMANCE ASSURES  
POST-WAR PREFERENCE—COAST TO COAST

Building load for gas companies, sales for heating dealers... and good will for both... PAYNE gas furnaces have been associated with advanced design and engineering leadership for 30 years. \* Post-war models will be improved, of course... but gradually, soundly, and only after exhaustive tests. And they will be ideally adapted to...

## Payne ZONE-CONDITIONING

... a progressive development of the time-tried PAYNE "Unit" heating system: Winter air-conditioning and cooling summer ventilation, controlled by zones or rooms. Write for new ZONE-CONDITIONING booklet.



# PAYNEHEAT

30 YEARS OF LEADERSHIP

Payne FURNACE & SUPPLY CO., INC., BEVERLY HILLS, CALIFORNIA

# THE FACTS ABOUT THE Field

GATE BALANCED  
AT FACTORY

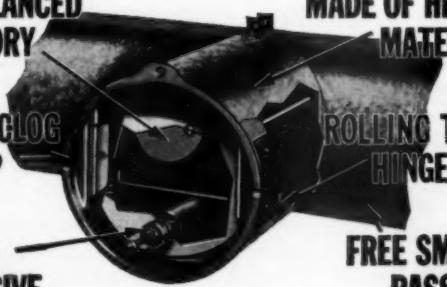
DOESN'T CLOG  
OR WARP

QUICKLY  
RESPONSIVE

MADE OF HEAVY  
MATERIAL

ROLLING TYPE  
HINGE PIN

FREE SMOKE  
PASSAGE



#### ROCKER TYPE FULCRUM

This design — the action of the old rocking chair — means less friction. Less friction means greater accuracy, greater sensitivity, no binding, no oiling, nor corrosion and years of trouble free operation. The hinge pin rolls in slots, instead of twisting in journals.

#### OFF CENTER GATE MOUNTING

This mounting — coupled with side wings — provides greater sensitivity and greater accuracy. Barometric pressure operates on a greater effective area; the side wings increase the air opening more uniformly, more accurately compensating for each barometric change.

#### EXTENDED HOUSING

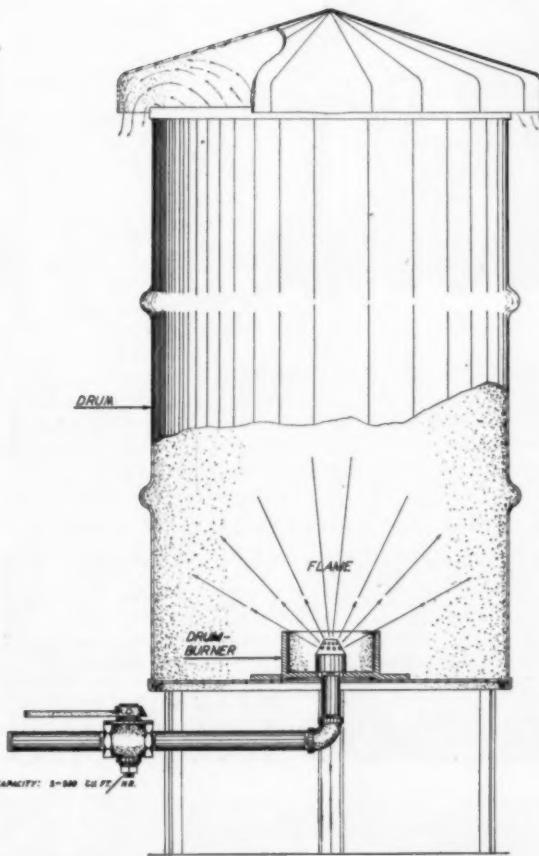
This design places the gate — even in wide open position — outside the flow of gases from the heating unit. Thus the Field Control is not readily fouled by soot, nor will the gate warp from heat. This means longer operating life — no service calls — uniform regulation.

# Field

CONTROL DIVISION

OF H. D. CONKEY & COMPANY, MENDOTA, ILLINOIS

# John Zink



## DRUM GAS BURNER

Solves Warehouse Heating!

A John Zink Stove Burner fitted into an oil drum, a piece of casing or a piece of old pipe, makes a very efficient heater for warehouses, store rooms, machine shops, garages and work shops.

Sells for **\$5.50** f.o.b. Tulsa, Okla.

*Burner Only*

Shipping weight 10 lbs.

Can be used on any type of gas at any pressure. Furnished with Burner Head suitable for  $\frac{3}{8}$ " or  $\frac{3}{4}$ " Gas Connection—5 to 500 cu. ft./hr. capacity—Trouble-free operation—No service—No adjustment needed—Can't get out of order—Lasts for years—Can be used either with or without brick baffles.

## John Zink Company

4401 South Peoria

TULSA, OKLAHOMA

New York - Los Angeles - Detroit - San Francisco - St. Louis



Famco FOOT POWERED Squaring Shears cut up to 18 gauge mild steel with ease. Made in five sizes . . . 22", 30", 36", 42" and 52" cutting widths (three largest have "hold down" attachment). The knives of all models have tool steel cutting edges. Compression springs are encased against breakage. Furnished with front, side and back gauges. Write today for full information on the Famco line of low cost Squaring Shears.



**POWERFUL PRESSES THAT NEED NO POWER**  
Famco Foot Presses, made in 10 models (bench and floor stand types) are widely popular for light forming and stamping operations.

Famco Arbor Presses deliver up to 15 tons pressure without power cost. Make assembly or dismantling easy. 32 models, in bench or floor types.



**FAMCO MACHINE COMPANY, 1314 18th STREET, RACINE, WISCONSIN**

**famco**

**ARBOR PRESSES  
FOOT PRESSES  
SQUARING SHEARS**



**The General Says  
ATTENTION**

Write today for the complete information which General Blower Co. has prepared for you regarding

**GENERAL  
MULTIBLADE  
EXHAUSTERS**



Ask for Portfolio  
**SC-101—A.A.**

**GENERAL BLOWER COMPANY**  
*Producers of Air Moving Equipment*  
**401 North Peoria St.      Chicago 22, Illinois**

## *With the Manufacturers*

General Controls Co., Glendale, California, announces the appointment of A. E. Hess as manager of its Houston branch office. Hess, who has had many years of experience in the engineering field for such firms as The Carrier Corporation and the Johnson Service Company, also spent several months on special engineering duty for the United States Navy.

As manager of the Houston factory branch, Hess will devote his entire time to serving users of automatic controls in the heating, refrigeration, aircraft and industrial fields throughout southern Texas, Louisiana and southern Mississippi.



**A. E. Hess**

The Viking Air Conditioning Corporation, 5600 Walworth Avenue, Cleveland, has recently appointed Norman S. Wright & Company as Pacific Coast representatives.



**W. R. Persons**

The appointment of W. R. Persons as assistant sales manager has been announced by J. F. Lincoln, president of The Lincoln Electric Company, Cleveland, producers of arc welding equipment. In his promotion to this new post Mr. Persons will act as assistant to C. M. Taylor, vice president and general sales manager.



### **LINE CHIMNEYS for PROFIT!**

#### **ATTENTION CONTRACTORS:**

Make a profitable business of installing Vitroliner Vent Pipe in old or new masonry chimneys for long life and PROTECTION. Ideal for gas or oil fired jobs where CONDENSATION is an important problem.

VITROLINER CHIMNEY LINER is heavy gauge, high quality enameling stock iron and is coated inside and out with special high temperature acid-resisting vitreous enamel. Bell and Spigot type joint assures a perfect and uniform fit.

Vitroliner Vent Pipe is easy to install in a few hours. Write for details to

**CONDENSATION ENGINEERING  
CORPORATION**  
**122 S. Michigan Ave.      Chicago 3, Illinois**

## With the Manufacturers

The L. J. Mueller Furnace Company of Milwaukee announces the appointment of Douglas and Seidler, 1216 Connecticut Avenue, N. W., Washington, D. C., as a manufacturers' representative for the company throughout the State of Virginia, a portion of the States of Maryland and North Carolina, and the District of Columbia.

Ray Maxwell, 7302 Washington Avenue, New Orleans (18), La., has been appointed to serve as manufacturers' representative, in a territory including a large portion of the State of Louisiana, plus portions of the States of Arkansas, Mississippi, Alabama and Florida.

Donald J. Reese, who has been with the Steel Division of the War Production Board at Washington, D. C., since April, 1942, has resumed his duties with the Development and Research Division of The International Nickel Company, Inc., at New York, T. H. Wickenden, Manager of that Division of the Company, announced.

### Important Meetings

Mar. 20-21—New York State Sheet Metal, Roofing and Air Conditioning Contractors' Assn., Inc. 1945 War Conference for local association delegates only. Sheraton Hotel, Rochester. Clarence J. Meyer, Secy., 567 Genesee St., Buffalo 4.

Apr. 30-May 1—Sheet Metal Contractors National Association. Board of Directors Meeting. Melbourne Hotel, St. Louis. Clarence J. Meyer, National Secretary, Buffalo 4, N. Y.

May 18-19—Roofing & Sheet Metal Contractors Association of Florida. Angelbilt Hotel, Orlando. Fred A. Falkner, President, c/o Falkner, Inc., P. O. Box 673, Orlando, Florida.

For over 30 years Palmer of Phoenix has been continuously making and trying out evaporative coolers in the testing ground of coolers: the Arizona desert...to achieve the perfected 1945 model Sno-Breeze.

**Palmer**  
Manufacturing Corp.  
Phoenix, Arizona

**Dependable, Fast-Selling**  
**GLEASON-AVERY**  
**FURNACE SENTRY**

Popular with dealer and homeowner because it's easy to operate, easy to install, *always safe*. The only regular set with exclusive "straight line control" safety feature of Gleason-Avery Safe Return Motor plus the sensitivity demanded of an accurate thermostat.

For hand-fired domestic heating plants. No sprockets or rotating arms to get out of order. In case of current failure, draft damper closes automatically; check opens. Finger-tip adjustment, synchronized settings. 2-wire low voltage control. Smart Mirror-Lite finish.

No. 130, Furnace Sentry Unit Package, complete with thermostat, damper motor and accessories—ready to install. **LIST PRICE... \$19.50**

**Gleason-Avery, INC.**  
AUBURN, N. Y.  
A RELIABLE NAME IN TEMPERATURE CONTROLS

**Premier FURNACE CLEANER**

**BUILDS UP SERVICE VOLUME!**

The sturdy Premier Furnace and Boiler Cleaner works as your best ally in developing service business *in volume*—it gives you first-hand knowledge of needed repairs while it brings you profits on cleaning jobs! It's rugged and powerful, yet compact and light weight—easily carried and operated by one man. Write today for complete information.

**NEW IMPROVED MODELS**  
*Completely Equipped*

**ELECTRIC VACUUM CLEANER CO., INC.**  
1730 Ivanhoe Rd. • Cleveland, O.

**1/2 H.P... \$74.50**  
**1 H.P... \$89.50**

BETTER  
SERVICE

means

BETTER  
CUSTOMERS

Service is a commodity . . . Administered well it brings benefits in customer satisfaction, increased profits and repeat business.

The Doyle Vac-It Furnace Cleaner is designed to give your customers complete, satisfying service. Expertly engineered, rugged, powerful it cleans thoroughly and efficiently, sucking out all soot and dirt, quickly eliminating "plug-up" conditions. Write today for full information.

VAC-IT CLEANS

Furnaces      Stokers  
Boilers      Oil Burners  
Chimneys      Heaters  
or the entire Basement

*Doyle* VAC-IT

DOYLE VACUUM CLEANER CO., 227 Stevens St., S.W., Grand Rapids 7, Mich.



FREDERICK  
INDUSTRIAL  
STOKER



SPEAKING  
. . . Mathematically

Frederick's experience plus engineering knowledge and understanding of industry's needs results in a stoker which has subtracted from usual fuel consumption and multiplied savings for a long list of satisfied users.

This stoker is a real fuel saver. It is designed and constructed to get maximum heat from every ton of coal burned. Investigate the possibilities of the Frederick stoker . . . write for your copy of our Stoker Catalog . . . now.

Stoker Builders Since 1918

THE  
*Frederick* IRON & STEEL CO.  
Frederick, Maryland.

## News Items . . . . .

### Lennox Dealer Changes Name

Guest Sheet Metal Works, New Orleans, La., has succeeded the former Guest and Viviano firm. The company, a dealer for Lennox heating, specializes in furnace work, sheet metal work and repairs. They maintain a year-round day and night repair service.

### Memphis Firm Has New Name

Memphis Air Conditioning Co. is the new name of the former Bellevue Roofing and Insulation Company, now in a new location at 8 North Front St., Memphis, Tennessee. The company sells roofing, rock wool insulation, sells and installs attic fans, apartment fans, thermostats and floor furnaces.

E. T. Kinney and Joe Forgione are partners.

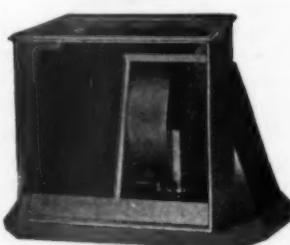
Stanley E. Maresh of the Maresh Sheet Metal Works, 905 Seventh Street, N. E., Cedar Rapids, Iowa, died on September 12th.

Mr. Maresh started his sheet metal career at the age of fourteen and continued to within one week of his death at the age of seventy-four. Mr. Maresh learned his trade from his father, V. W. Maresh, who came from old Bohemia and who was decorated by the Czar for his efforts in introducing hand turning machines into Russia.

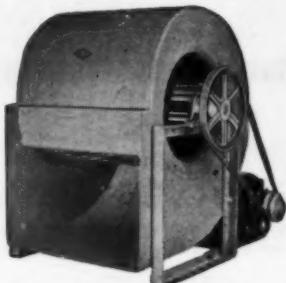
Don Maresh, a son, will continue the contracting, jobbing and repair work, slate, tile and metal roofing, and electric and acetylene welding services offered by the concern.

## Properaire AIR MOVING EQUIPMENT

**BLOWERS  
EXHAUSTERS  
FANS**  
for Homes  
Stores  
Offices  
Factories  
Institutions



SERIES 2000  
Insulated Package Units



"B" ASSEMBLY Belt Drive



TYPE E  
Direct Drive

Ask your Jobber to write  
for "Blower File" FREE

**GRAND RAPIDS DIE & TOOL CO.**  
1202 Godfrey Ave., S. W., Grand Rapids 2, Mich.

## Two Oakland Firms Merge

Ruckner-Vaughn Company, 300 Seventeenth St., Oakland, California, has been formed—a merger of the Vaughn-G. E. Witt Co., and the Rucker Equipment Company—with a factory in Emeryville. Co-partners of the company are Clark E. Rucker, in charge of sales, and Clifford S. Vaughn in charge of production.

The company manufactures a line of standard pressure valves, steam and air atomizing oil burners, a special compressed air line lubricator, and act as sales agents for a group of compressed air and production tools.

## Kruckman—The Veterans Problems

(Continued from page 59)

in operation among 250 plants in the Great Lakes and Upper Mississippi areas. In 1944 he directly influenced the placement of 248,000 handicapped workers in shops and plants in all 48 States. Among them were many veterans. It is Mr. Banta's judgment that present trends show that not less than 35 per cent of the veterans who will return in the future, possibly even more, will be physically handicapped.

The significance of these suggestions to the employer as well as to the worker is therefore sharply clear. The point is particularly pertinent to those whose employees are now in the Services. It has been estimated that 60 per cent of the veterans will expect their jobs back after the war. Discounting those who went to war from their own businesses, from colleges and universities, and who occupied temporary jobs, it has been calculated by SSS that over 2,500,000 men

**"Use CLARAGE PRODUCTS and Repeat Business Comes Easy!"**

This nationally known, nationally accepted fan equipment helps you land desirable jobs—helps you KEEP desirable customers. It will pay to figure with us on any air handling or conditioning project. Write for Clarge catalog.



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UNIT HEATERS



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Clarge Fan Company, Kalamazoo, Mich.  
APPLICATION ENGINEERING OFFICES IN ALL PRINCIPAL CITIES

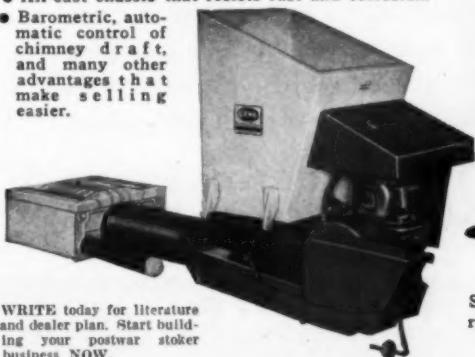
## MY INDUSTRIAL STOKER BUSINESS IS BOOMING!

I'm selling stokers to office buildings, hospitals, schools, churches, hotels and other places that use commercial or industrial sizes. At the same time, I am building up a nice prospective customer list for the smaller domestic models and delivering as fast as they are available.

Get Going now with

## GEHL STOKERS

- Engineered to do a better job for more years, by a 78-year-old company.
- Gehl reputation means customer confidence.
- All-cast chassis that resists rust and corrosion.
- Barometric, automatic control of chimney draft, and many other advantages that make selling easier.



Sizes to meet various requirements

GEHL BROS. MFG. CO.

Established 1867

Dept. BC-800

West Bend, Wisconsin

A GEHL WINS FRIENDS WHEREVER IT GOES

ALL THESE  
Standard Shapes  
made with  
LOCKFORMER



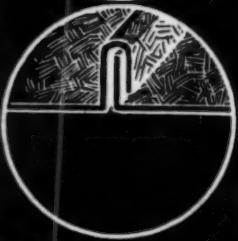
Standing  
Seam  
Locks



Pittsburgh  
Locks



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Drive  
Cleats  
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Flanges

Over 5,000 Lockformers now in use.

Write for illustrated catalog

THE LOCKFORMER COMPANY  
4615 Arthington St. Chicago 44, Illinois

# Swartwout ROOF VENTILATORS

BOOST your standing in the roof ventilating field with this complete, dependable line of equipment. You benefit by Swartwout's long experience and modern developments in industrial & commercial ventilation. We help you plan installations on which you need technical advice. Write for full particulars.

THE SWARTWOUT COMPANY  
18511 Euclid Ave. • Cleveland 12, Ohio



## ATH-A-NOR Furnace Repair Parts



The furnace choice of dealers who know performance and saleability has been Ath-A-Nor for more than 50 years. Quality, economy and efficiency have always distinguished the Ath-A-Nor line. Replace with Ath-A-Nor to insure maximum performance and fuel economy! And continue to pile up scrap for munitions and see that it reaches government agencies speedily!

**MAY-FIEBEGER COMPANY**  
MANUFACTURERS OF QUALITY HEATING EQUIPMENT FOR  
OVER 50 YEARS  
NEWARK, OHIO

have a rock-bottom right to the old jobs which they will expect to fill. The present appearance that less than 25 per cent claim their jobs is regarded as an illusion caused by the supernormal demands in war industries. At present many veterans probe about for the best paying jobs.

Patently the postwar situation will be different. And it is suggested that the probability that veterans will go into business for themselves is a note that has been greatly overplayed. The GI Bill loans are not large, and they will not be given as easily as the announcements have inspired many people to believe.

### How Many Discharges VE-Day?

How many soldiers will be released after the German war is over? Broadly it is anticipated the number will be approximately 2,250,000. Those released will be determined by an Adjusted Service Rating. They will be released in staggered discharges. Just how the releases will be adjusted has not yet been announced. The scoring will be based on four major priority considerations: the service record will rest on the number of months of Army service since September 16, 1940; the overseas record will be determined by the number of months served overseas; the combat record will rest on battle participation and medals awarded; and there will be consideration for each dependent child under 18, but not more than three. But it is wise to bear in mind that it is not known how these credits or records will be applied, or how many men will be drawn from the European theater or from the Pacific.

There is, logically, increasing interest among busi-

## Johnson Furnaces for Quick Action

Turn on the HEAT with Speedy Time Saving,  
Gas Saving Johnson Units

No. 120 Hi-Speed Steel Heat-Treating Furnace  
Reaches 1500° F. in 5 Minutes! . . . 2300° F.  
in 30 minutes. Unexcelled for heat-treating  
high-speed steels, or hardening dies, punches  
and small metal parts. Firebox 5" x 7 1/2" x  
13 1/2". Temperatures easily regulated. Complete  
with Carbofrax hearth. G. E. Motor and Johnson  
Blower.

\$129.50  
F.O.B. Factory



No. 70  
Hi-Speed Bench Furnace  
Reaches 2250° F. in 30 Minutes. Designed  
for high-speed steels but equally efficient  
for hardening any steel punches, dies, cutting  
tools or small metal parts. Firebox  
5" x 7 1/2" x 9". Equipped with  
Carbofrax hearth. G. E. Motor and Johnson  
Blower.

\$89.50  
F.O.B. Factory

FREE CATALOG describes  
Johnson Furnaces for pot-hardening,  
melting, annealing and  
hi-speed heat-treating. Write for  
your copy.

Johnson Gas Appliance Co.  
580 E Ave. N.W. Cedar Rapids, Iowa

ness men in the regulations and requirements that govern the re-employment of returning soldiers. The subject is too complicated to discuss here at this time. It has been worked out in much detail by SSS. Always remember that the Selective Service Act has placed the Selective Service System in charge of the huge job of seeing that justice is done the veteran in regaining his job, if he wants it, and if he is qualified still to take it, and if the employer still is doing business in such way that the veteran is legally entitled to the job. SSS not only works on these problems with the help of WMC, WLB, and similar agencies, but likewise depend upon WFA, and ODT and Railroad Retirement Board and similar agencies for cooperation.

#### Many Problems Face Employers

In order to get a clear understanding of the problems involved, it is essential to study a number of definitions which have recently been worked out. For instance, there is the problem where a number of men successively have left the same job to enter the services; and there is the temporary job, and the war job, and probationary jobs. And there is the job of "like prestige." One of the troublesome factors will be to fit a shipping clerk who earned \$35 a week before he went to war, and who became a Captain or Colonel by the circumstances of his peculiar abilities and Service conditions. One of the most complex problems will be the solution to the involved questions of seniority.

Not the least by any means will be troubles of superseniority which the SSS insist must be given to the veteran over and above all union contracts, requirements, and regulations. Some of these puzzlers have been considered by joint conferences of the AFL, CIO, and the Veterans of Foreign Wars. These conferences have resulted in an agreement, one part of

# Order from PEERLESS

- Your requirements for complete warm air heating needs—including Steel furnaces—*repair parts for all makes of furnaces and boilers.* Fittings, registers, blowers, asbestos paper, electric controls, etc. Orders will be filled as rapidly as present conditions will permit.

PEERLESS FOUNDRY COMPANY

1855 Ludlow Ave.

Indianapolis 7, Ind.

## SHEET METAL MEN should know more about this machine



**KALAMAZOO**  
Metal Cutting Band Saw

**SAVES  
EVERY  
DAY  
in your  
SHOP**

Why let high priced labor cut by hand—lengths of angle iron—rods—tubes—bars, etc.—when this low priced machine does these jobs with amazing Speed and Accuracy? Pays for itself in Labor Saving and Steps up Production. Scores of shops say "just what we've always wanted."

*Write for bulletin.*

**MACHINE TOOL DIVISION**  
Kalamazoo Tank & Silo Co. — Kalamazoo 16, Michigan

**New! Convenient!  
HEATING RECORD  
CONTAINER  
For Your Customers**

**FREE  
TO ALL OIL BURNER  
and FUEL OIL DEALERS**



As illustrated—especially designed as a container for fuel oil ration coupons. Front has place for customer's name and ruled form for keeping a complete record of fuel oil purchases. Reverse side lists 12 points on how to save fuel and has place for dealer imprint.



A gift your customers will appreciate—and it's FREE—to help you build post-war business and to get profitable service and accessory sales now. ORDER TODAY. State number desired using your business letterhead.

**WAYNE VICTORY HEATING MANUALS**  
They're FREE to all Oil Burner and Fuel Oil Dealers. Order your supply of these manuals now. State number needed using your business letterhead.

WAYNE OIL BURNER CO. 913 GLASGOW AVENUE  
FT. WAYNE 4, INDIANA

**WAYNE'S V-DAY LINE** **WILL BE  
COMPLETE**

which is, for instance, that the disabled veteran will not be compelled to forfeit his right to reemployment. If he cannot do the work of his old job, he must be given another which he can do, and he is to be paid the prevailing wage rate. The agreement also guarantees the veteran, in an occupation covered by collective bargaining contracts, full union membership; and he is guaranteed full seniority rights corresponding to the length of his military service after September 1, 1940. A month of military service will be equal to a month of job service at home.

#### SSS May Clash With Unions

Unions are said not to agree with the SSS seniority regulation. It obviously endangers many union territories. In fact, an examination of the SSS regulations, presumably stemming from the Selective Service Act, will measurably squeeze the functional

powers of unions. In effect some of the regulations, springing from the law, will place union members in positions distinctly subordinate to the rights of veterans, regardless of union contracts and former practices. Obviously this condition will greatly depreciate the influence and the service of the unions, in relation to their members and in their relations with the employers. It is self-evident what the result may be if a union member is pushed aside by the superior rights of a veteran in seniority. It is anticipated the unions will come out of this difficulty with impaired prestige. As between the political weight of unions, and the man who has sacrificed himself in this war, there is no doubt the man who wore the uniform will win.

It will be important for the employer to keep an alert watch on this potential collision between unions of the Guardian of the Veterans: the SSS.

**FOR DEPENDABLE HOME HEATING**



**GRAVITY AND FORCED AIR FURNACES**

FOR DEALER REPRESENTATION SEE YOUR JOBBER OR WRITE US DIRECT

MANUFACTURED BY  
CERTIFIED FURNACE CO., 1000 BERRY AVE., ST. PAUL  
DIVISION OF STAINLESS & STEEL PRODUCTS CO

**BE A  
BLOWER  
DEALER**

**Clip this Ad**



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**Get  
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Free**



BI-MONTHLY MAGAZINE

**VIKING AIR CONDITIONING CORP.**  
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You can **UP** production  
... even  
with  
unskilled  
labor



MODEL 1236  
36-in. Throat  
12-Gauge Capacity

CIRCLE CUTTING  
ATTACHMENT  
included as  
Standard Equipment  
with this  
machine

**Libert Hi-Speed SHEAR**

From almost any material—steel, stainless steel, brass, aluminum, metal screen, fiber, paper products—even an unskilled worker soon learns to cut intricate combinations of circles, angles, and curves, *rapidly, accurately, cleanly*. A *Libert Shear* does *not* nibble. Edges are smooth, need no finishing. Inside cuts are no harder than outside, whether it's flat sheets or formed work. No starting holes are necessary. *Write for Bulletin.*

Made in sizes up to 60-in. throat, 10-gauge capacity

**LIBERT MACHINE COMPANY**  
Green Bay, Wisconsin

## On Our Industry's Front

(Continued From Page 65)

cause space heaters usually are used in residential establishments or in small stores and offices to heat a single room. The quantity of oil burned by this type of consumer is small. In recent months, however, manufacturers have developed large space heaters that are being installed in warehouses and other large commercial establishments to heat large areas. Today's action is designed to control more closely the large supply of fuel oil that is beginning to be diverted into channels that previously had not used this type of fuel.

Action was taken by amending a formal order (Petroleum Distribution Order 13) to bring the use of fuel oil in large heaters under the provisions of the order, which stipulates in what ways fuel oil may be used. Previously, these large-scale consumers could obtain fuel oil coupons through the Office of Price Administration without obtaining prior PAW approval.

### Postwar Jobs in Sales

**S**OMETHING like 23 million jobs must be found in the sales, service, and distribution fields after the war to maintain a sound economy in the United States, the national employment committee

**MASTER**  
TEMPERATURE CONTROLS

### Those "Krauts" Are Tough

Several times it has looked as though we had them "on the ropes." But they staged a comeback that made it necessary for our company to make up another big batch of precision instruments for the Navy and Air Corps.

Well, they can't last forever and, in the meantime, we are getting ready for a quick transition to turning out our regular products with improvements and several new things that you will like.

#### We're Itching To Go

All tests of the improvements in our regular products and of the several new things we have up our sleeve make us impatient to invite you to share these good things with us.

All we can say now is that we shall be ready—and right—when the first green light comes on.

Work To Finish The War and Watch White



**WHITE MANUFACTURING CO.**  
2368 University Ave. St. Paul, Minn.



### Pillow Block by

**Randall**

Ever alert for improvements, Randall engineers have redesigned and streamlined their famous one-piece steel housing pillow block to make it even stronger, yet with less resistance to the flow of air, by forming the housing around the spherical ball.

All of the efficiency of the large single or double oil reservoir and the constant self-aligning features are maintained. Write for full details now. Ask for Pillow Block Catalog No. 42.

### RANDALL GRAPHITE PRODUCTS CORPORATION

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### BOOST PRODUCTION SCHEDULES WITH

### MARSHALLTOWN THROATLESS SHEARS

★  
**CUT ANY SHAPE**  
★  
**CUT ANY SIZE**  
**SHEET**



No. 18  
HAND  
POWER

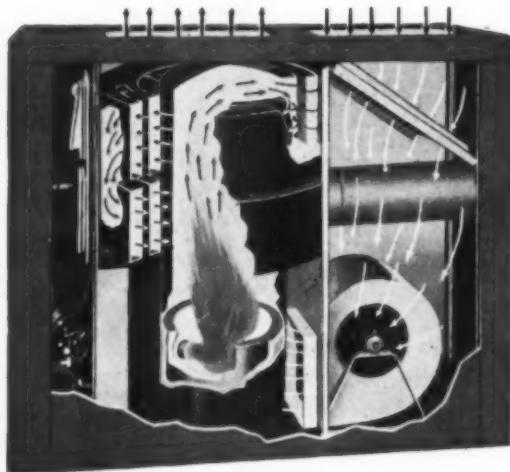
Here's just the Shear that offers every feature you want. It does hundreds of odd shearing jobs better and faster—yet is an inexpensive hand operated tool. No matter what type of cutting—either irregular shapes or straight splitting—from ANY size sheet, you'll quickly find that the Marshalltown Throatless Shear is the most profitable tool in the shop.

Get Special Shear Bulletin today. Gives details of sizes from 18 gauge to one-half inch capacity.

### MARSHALLTOWN MFG. COMPANY

920 E. Nevada St., Marshalltown, Iowa

# THIS is a RADIATION FURNACE



THE Radiation Furnace has been on the market for the last ten years, and has proved to be the most efficient unit.

In the Radiation Furnace hot gases are directed so there is a continuous flow from the upper to the lower set of steel radiator flues which absorb and transmit the heat to be

home before it escapes through the chimney. It is also provided with a safety in case any control should go wrong. It has ample cleanouts, so that every square inch of the flues can be easily cleaned. It has an observation window and a repair opening to the Combustion Chamber. Write for complete details today.

**RADIATION FURNACE CORPORATION**  
BENTON HARBOR, MICHIGAN

**IT SAWs! IT FILES!**

**A PORTABLE POWER-SAW AND FILE**

**New**

**MULTI-PURPOSE TOOL**  
SAVES TIME — SAVES MONEY

**★** The Saw-Chief attaches to electric and air drills, or may be driven by flexible shaft. Has saw blade, hinged ready to cut rapidly with 7/8" stroke. Cuts all metals—every gauge, wood, plastics, other materials. Eliminates slow, tiresome hand-sawing operations. Reaches into hard-to-get-at places with ease. Insert ordinary machine file for power-filing operations. It's portable . . . carry it from job to job.

**QUICK DELIVERIES ON AA-S PRIORITY OR BETTER**

The Saw-Chief can be shipped quickly, ready for attaching to your drill or flexible shaft at only \$45.00. May also be obtained complete with heavy duty drill at \$90.00, or with high-powered, light-weight drill at \$83.00.

Phone your jobber for demonstration today or write us direct!

ORDER **SAW-CHIEF** TODAY

**CHICAGO PRECISION EQUIPMENT CO.**  
919 N. MICHIGAN AVE., CHICAGO 11, ILL.

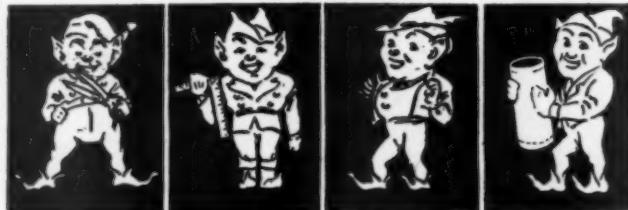
of the American Legion declares. The report asserted that too much emphasis has been placed on factory-type work which will provide only about 25 per cent of postwar employment.

Lawrence J. Fenlon of Chicago, chairman of the committee, said that although the Legion insists that in all discussions of postwar jobs the first emphasis must be on jobs for returning veterans, it recognizes that "we do our fighting forces an ill favor if in finding jobs for them we leave other millions out of work."

Present manufacturing employment is out of proportion because of the war, the chairman said, and he predicted 3½ million fewer jobs in manufacturing, 2 million fewer in government, and 1 million more in agriculture after the war.

Thus, to have maximum employment, the Legion believes that there must be 1 million more self-employed and 7 million more employed in service and distribution. That means that about 42 per cent of all working men and women would be in service and distribution fields. These 8 million new jobs would be found by selling—by developing a market for the goods the nation can produce, the report stated.

"We are going to have to really sell for the first time in our national life, or we may become a socialist state, with government controlling all production and distribution," Chairman Fenlon said. "We in America have never fully developed our selling and distribution, our markets. We have never fully appreciated our strictly service fields as an economic factor. We have been bound by the illusion of production of commodities."



WILL WILLIE WILLIAM BILL

## 4 Little "Fitting" Guys Fighting For You!

Will cuts installation costs—Willie makes fittings fit—William keeps prices down to bed rock—and Bill sees that there is stock near you.

**FLASH NEWS!** Complete, simplified line Gravity Pipe and Fittings now available on rated orders.

**FREE:** Complete, easily understood gravity pipe and fittings catalog showing full simplified line. Write Dept. 2 for prices and catalog.

**THE WILLIAMSON HEATER COMPANY**  
CINCINNATI 2, OHIO.

**WILLIAMSON**  
WARM AIR FURNACES

## FHA to Process GI Loans

THE Federal Housing Administration, through its 62 State and district offices, will process all applications by veterans for home loans under section 505 of the Servicemen's Readjustment Act of 1944 through an agreement reached with the Veterans' Administration.

The FHA has been designated as both the appraiser and the reviewing agency for the Veterans' Administration in all cases where a veteran applies for an FHA-insured first-mortgage loan, supplemented by a Veterans' Administration guaranteed second mortgage up to \$2,000 as provided by the GI Bill of Rights for use as a down payment.

Under the new arrangement, the Veterans' Administration will use FHA's facilities for processing all loan transactions under section 505, once the eligibility of a veteran has been established by the Veterans' Administration. The only charge to the borrower for this service will be the usual FHA examination fee based on the FHA-insured principal loan.

As in the past, a veteran will apply to a private lending institution for a loan to purchase or build a home. The lender first will inquire at the nearest office of the Veterans' Administration as to the eligibility of the applicant for a Veterans' Administration guaranteed loan and will receive a "certificate of eligibility" which will designate the FHA both as "appraiser" and "designated agency."

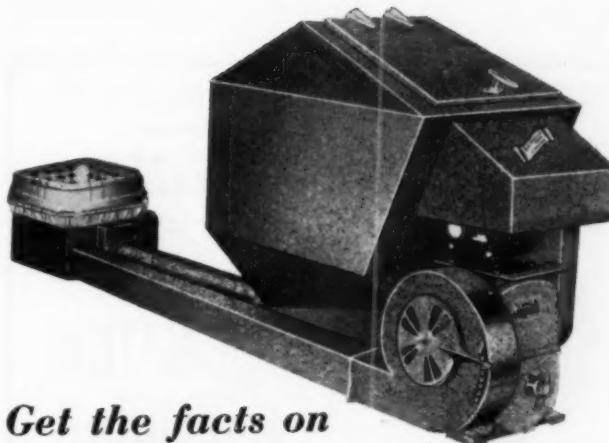
# Brundage

BLOWER  
SPECIALISTS  
SINCE  
1919



Note: Convenient access door, large filter area and self-compensating motor mounting—features of all Brundage blower-filter package units.

Whether you need a complete blower-filter package unit or just an assembly, give your customers the benefit of Brundage master craftsmanship available in both . . . Models and sizes to meet a wide range of requirements.



## Get the facts on SCHWAB SAFE STOKERS

1. They have proven themselves over a number of years to be one of the best performing stokers ever built.
2. With a transmission that is easy to operate and one that will last indefinitely.
3. The power unit is one of the most important parts of your stoker. The Schwab power unit is made by Schwab, for Schwab, and will never be an orphan.
4. The quality and sturdiness of construction cannot be beat. All sizes of commercial and industrial Schwab Safe Stokers are available now! Capacities from 62 to 600 lbs. per hour. Write or wire for details.

THE SCHWAB TRANSMISSION IS A POSITIVE  
RATCHET DRIVE  
81 years of continuous Manufacturing Experience

THE Schwab Safe Company  
LA FAYETTE, INDIANA

WHITNEY-JENSEN PRODUCTS  
30 YEARS EXPERIENCE

## Nos. 7, 7½, 8—Imperial ROLLER BEARING PUNCHES

Improved lever-type eccentric-action punches made easy-working by roller bearings. Will punch and strip positively inside 90° for quick, clean, accurate work.



Easy to change punches and dies. Capacities: (No. 7)  $\frac{3}{4}$ " hole in  $\frac{3}{8}$ " iron; (No. 7½)  $\frac{3}{4}$ " hole in  $\frac{3}{16}$ " iron; (No. 8 Imperial)  $\frac{3}{4}$ " hole in  $\frac{1}{4}$ " iron.

## No. 38 BENCH SHEAR

A small, powerful, throatless-type shear with capacity up to  $\frac{3}{16}$ " mild steel. Cam action provides straight up-and-down blade travel.



Length of blade 5". Size, overall,  $11\frac{1}{2}'' \times 7\frac{1}{2}''$ . Weight 45 lbs. All parts interchangeable for easy replacement. Write for Circulars.

WHITNEY METAL TOOL COMPANY  
91 FORBES ST. • ROCKFORD, ILL.



*BARTH*  
U. S. A.

## COMBINATION MACHINES

BARTH offers a wide range of Combination Machines for burring, edging, wiring, turning, and flanging. Three sizes are furnished with roll diameters 1½", 2½", and 3¼". Capacity to 18 gauge.

All newly designed and sturdily built to meet your requirements.

**THE BARTH MANUFACTURING CO.**  
MILDALE, CONN.

## CHICAGO STEEL BRAKE



BEST BY FORTY-TWO YEARS TEST

**DREIS & KRUMP MFG. CO.**  
7404 LOOMIS BLVD.  
CHICAGO 36

## Majestic

HEAVY DUTY STEEL

## Stoker Furnace



## THE FURNACE THAT ENDS THE CLINKER PROBLEM

- Specially designed and built for stoker firing
- Suited for any make or type of domestic stoker
- Built-in compartment for convenient dust- and gas-free clinker removal
- Interchangeable panels permit placing stoker on either side
- Rugged, durable, boiler plate steel construction
- Leakproof electric-welded joints inside and out
- A high quality, efficient heating plant at an attractive price.
- Backed by Majestic's 38 years of heating experience!

**The MAJESTIC COMPANY**  
989 Erie St., Huntington, Ind.

The lender then will submit the "certificate of eligibility," the other papers required by the Veterans' Administration, and the usual FHA application for mortgage insurance to the local FHA office covering the territory. From then on FHA will follow its usual procedure in processing the application for mortgage insurance and, in addition, shall furnish the Veterans' Administration with an Appraisal Summary Report.

## Oil and Gas Outlook

**T**HE outlook for civilian users of gasoline and home heating oil have been described by PAW as a state of supply and demand just about in balance "on paper," but that various factors—notably an upsurge in military requirements or intensified transportation trouble—could quickly upset the balance.

The current stringency along the Atlantic Seaboard is not due to an over-all lack of gasoline but to transportation tie-ups. PAW says: "We have gasoline in certain of the Midwestern States that could be sent to the East if we had enough tank cars. However, we have been struggling to do the job with an amount of rolling stock which never was intended to be a mainstay of the East's petroleum supply. Moreover, this winter we have had to cope with a railroad congestion so serious that temporary embargoes had to be imposed on civilian freight to the Northeastern States. There are something over 140,000 tank cars in this country, of which 114,267 are carrying oil. The latter are working at seven times their peacetime



## PLANING MILL EXHAUSTERS

DIAGRAM shows how special streamlined inlet deflects air stream so as to reduce turbulence and back plate erosion.

RESULT: higher overall efficiency, lower maintenance cost, less time out for service and repairs.

**B. F. STURTEVANT COMPANY**  
HYDE PARK  
BOSTON 36, MASS.

rate, and the repair job alone as the result of this heavy usage is a considerable one."

Inland waterway transportation is near its lowest seasonal ebb. The Great Lakes are frozen against tanker traffic. Petroleum barges are getting up the Mississippi as far as St. Louis and up the Ohio, though traffic on the latter stream is severely impeded by high water and faces a freeze in the near future. If cold weather continues, ice conditions in Long Island Sound and New York Harbor will cripple petroleum deliveries there.

The bright spot in the picture is the continued smooth functioning of the "Big Inch" and "Little Big Inch" pipelines. They are consistently pumping more than 525,000 barrels of crude oil and refined products every day from the producing fields of Texas and from various refineries to the New York and Philadelphia areas. On December 15 last, all overland facilities combined were moving more than 3,000,000 barrels of petroleum a day, an all-time record.

Turning to the home heating oil situation in the Eastern States, PAW says stocks of this fuel in the area as of January 20 of this year were 8,220,000 barrels, or nearly 2,000,000 barrels less than on January 22, 1944. The situation throughout the country also is one of reduced stocks. Throughout the United States, we had 35,041,000 barrels in terminals and refineries on January 20, which was 3,071,000 barrels less than we had one year before. Despite higher runs of crude oil to U. S. refineries in 1945, the manufacture of home heating oil probably would be no greater than previously, and that users should expect no more liberal supply until the end of the war.

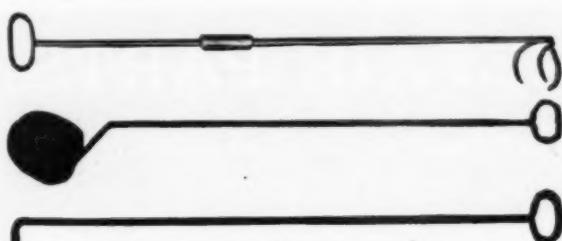
*Solve your roll forming problems with*

## ★ DAHLSTROM ★ Roll Forming Machines and Roller Dies

**BUILT TO DO YOUR JOBS**

*Send Sample or Rough Sketch for Quotation*

**DAHLSTROM** MACHINE WORKS  
5016 N. Kedzie Ave. — Chicago 25, Ill.



### ADAMS FIRING TOOLS

CLINKER TONGS  
ASH REMOVERS

FURNACE POKERS  
FIRE RAKES

FIRING HOES

Buy Adams Known Quality  
THE ADAMS COMPANY

BRIDGE STREET

DUBUQUE, IOWA

### Sand-Grind-Brush

with Black & Decker  
Electric Sanders



7" Special \$53

These husky tools drive abrasive discs, wire brushes, grinding wheels and other attachments . . . make quick work of removing paint and rust, smoothing welds and casting ridges, and many other metalworking jobs. Powerful Universal motors. See your Black & Decker Distributor, or write to: The Black & Decker Mfg. Co., 682 Pennsylvania Ave., Towson-4, Maryland.

**Black & Decker**  
Portable Electric TOOLS

DRILLS, HOLE SAWS, DRILL STANDS, LECTRO-SHEARS,  
BENCH GRINDERS, SANDERS, PORTABLE GRINDERS



Chisels, punches, drills, nippers and numerous other hand tools . . . quality built for long service. Sold by leading jobbers.

DAMASCUS STEEL PRODUCTS CORP., ROCKFORD, ILL.

For Balanced  
Atmosphere.



AUTOMATIC HUMIDIFIER CO. Cedar Falls, Iowa

### INDUSTRY'S VENTILATING PROBLEMS SOLVED!

No belts to slip. Direct connected. Sets up on the roof out of the way of everything. A com-



pact, self-contained unit easily and cheaply installed. Write for details now, Dept. 9.

THE GALLAHER CO., Owatonna, Minnesota

## Red Streak Cleaners Again in Production

• We are building a limited number of Red Streak Furnace Cleaners under Federal authority, to be sold to buyers who can qualify, which should not be difficult.

Write for complete information on purchase procedure. Pre-war price, pre-war quality. First come—first served. All repair and maintenance parts and materials are freely available to all.



**National Super Service Co., Inc.**  
1946 W. 13th St.,  
Toledo 2, Ohio

## SPOT WELD WITH AN ACME "Hot Spot" WELDER

Proven utility for over 26 years in thousands of sheet metal fabricating plants.

Write for Literature and Prices.  
Complete Range of Sizes  
Lifetime Guarantee!



**ACME ELECTRIC WELDER CO.**  
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REPAIR PARTS  
FOR ANY  
FURNACE, BOILER  
OR STOVE

Complete Line of  
Sundries and Supplies

FOR QUICK SHIPMENT

**OMAHA STOVE REPAIR WORKS**  
1206-8 DOUGLAS ST., OMAHA 2, NEB.  
SINCE 1882

## Complete Refractory Service to the HEATING INDUSTRY...

### PETCO

Interlocking Combustion Chambers . . . Baffles  
Insulating Cement Steel Furnace Linings

### PECORA

Pecora Asbestos Furnace Cement, Stove Cement,  
and Boiler Putty

### WALSH-Missouri

Fire brick, hearth and baffle mix, cupola block,  
plastic furnace lining

**B. A. PETERSON COMPANY**  
DOWAGIAC, MICHIGAN

## Must Provide Steady Employment

(Continued From Page 66)

out of the boss' pocket, but out of the productivity of the enterprise. If the boss can't find a market for his products, then eventually the scheme breaks down.

### Plan for Steady Jobs

Many businesses are so stable over the months and the years they are now hiring all or most of their employees on an annual basis. There are other industries, of course, that irregular but still have a good deal of stability, which could guarantee some of their employees a definite number of weeks of work.

The phrase "annual wage" has not become standardized; there is no one best method of stabilizing employment nor is there one best annual wage scheme.

As we prepare for the postwar, I would like now to recommend that all American business men study ways to eliminate needless layoffs and needless unemployment. In some cases, the approach should be piecemeal—job by job or department by department. Some of us might pick out a particular job in our plants and see if that one single job could not be made more regular.

Our goal for America should be a high level of production, of employment, and of wages. You can't build a steady economic structure on the quaking foundation of irregular jobs.

## INTO ALL CREVICES for perfect joints



ALLEN SOLDERING OIL  
Allen's Soldering Oil is a highly concentrated soldering compound, especially developed through Allen technical research, and endorsed by national underwriters. Causes neither verdigris nor corrosion. Gets into the tiniest crevices and takes solder along with it. Makes perfect electrical and mechanical joints. For hand or machine soldering. Excellent for sweat soldering copper pipe joints.

**L. B. ALLEN CO., Inc.**  
6702 Bryn Mawr Avenue, Chicago 31, Illinois

## REPAIR PARTS

For all  
Furnaces - Boilers - Stoves  
GUARANTEED TO FIT

There Will Be a Shortage of Repair Parts.

Better Place Your Orders with Us NOW.

All Parts Guaranteed to Fit.

**A. G. BRAUER SUPPLY CO.**  
2100 Washington Ave. St. Louis, Mo.

## Oil Burner Service

(Continued From Page 77)

and controls for all makes of controls, it is important to specify, when ordering, the manufacturer who maintains a supply depot in his immediate neighborhood, or nearby city.

### "Know-How" Necessary

The service man should understand the general functions, as well as the construction of each and every control on the market, so that he will be fully qualified to make repairs, change the wiring system when required, or substitute other appropriate controls, where it is impossible to secure new parts or new controls from the manufacturer of the worn out control.

There are several very prominent oil burner control manufacturers, each claiming advantage over their competitors, but little has been accomplished to date in the matter of standardization of construction, or interchangeability of repair parts.

### A Good Book

One control corporation is offering to dealers, and maintenance organizations, a very useful booklet, "Wartime Solutions to Control Problems," showing where and how certain of their control units may be substituted for other makes of controls without renewing the entire control system.

## BARBER BURNERS For ALL Gas Appliances



We have the facilities and experience for designing and building the exact type and size of burner unit to fit any gas appliance, using natural, manufactured, Butane or bottled gas. We cooperate with any reliable manufacturer in the necessary development and laboratory testing, and in acting as continuous source of supply for his burner units.

Latest Catalog on request.

THE BARBER GAS BURNER CO  
3704 Superior Ave., Cleveland, Ohio

## Bremil PORTABLE SHEARS

Your work will proceed faster and neater when you use Bremil Portable Shears on the job or in the shop. Write today for literature showing complete line.

ALL-ALLOY No. 2 cuts up to  $\frac{1}{4}$ " steel plate.

ALL-ALLOY No. 1 cuts up to No. 11 gauge strip or sheet.

BREMIL MFG. CO., ERIE, PA.

## MOREY FLOAT VALVE

DESIGNED FOR EVAPORATIVE COOLERS  
HAS MANY OTHER USES

LIST  
PRICE  
**\$2.00**

SIMPLE IN OPERATION  
EASY TO CLEAN

Materials corrosive resistant. IRIDITE PLATED. Non Water Absorbing POLY-STERENE FLOAT. Will flow 70 G.P.M. at 20-lb. Pressure. Usual Trade Discounts.

SEND FOR SAMPLE

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LOS ANGELES 35, CAL.  
TELEPHONE CRESTVIEW 5-3351

ALSO MANUFACTURER of MOREY'S PRECISION  
Evaporative Cooler (Mats) Pads—Send for Price List



## Vernois PARTS for best performance

VERNOIS furnaces give such wonderful satisfaction because they are carefully engineered and built of the finest materials available. When a Vernois furnace needs a new part, use only genuine Vernois parts for continued fine performance. Buy them direct.

MT. VERNON FURNACE & MFG. CO.

MT. VERNON, ILLINOIS



New and improved "EX" Fans are now available in standard sizes from No. 15 to No. 80 and from 200 to 30,000 CFM Capacity with pressures up to 15" W.G. These fans are commonly used for exhaust problems to handle dust, fumes, shavings, etc., but can be adapted for forced draft service.

"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus, "EX" Fans are ideal for resale purposes, as part of factory assembled units.

Write us about your problems. Send for Bulletin No. EX-41

BAYLEY BLOWER COMPANY  
1817 South 66th Street  
Milwaukee, Wis.

## A Type And Size For Every Need

For efficiently controlling light and medium dampers in heating, ventilating and air conditioning systems, specify Parker-Kalon Damper Controls. The line includes all types and sizes, at a range of prices to fit the needs of any job. Parker-Kalon Corp., 190-192 Varick Street, New York.



PARKER-KALON damper controls

FOR  
SAFETY'S  
SAKE

—and to protect your  
own reputation

## BUY ONLY GENUINE ROUND OAK PARTS

ROUND OAK COMPANY

Dowagiac, Michigan



WHOLESALE DISTRIBUTORS  
**SHEET METAL  
FURNACES**  
AIR CONDITIONING SUPPLIES

### MANUFACTURERS

#### Are You Looking For An AGGRESSIVE DISTRIBUTOR?

We are a well-established, financially sound firm distributing a number of nationally known lines in Northeastern Ohio. We are interested in establishing new lines...for after the war...NOW. Write for more information.

STATE SUPPLY CO.  
1273 EAST 123rd STREET  
CLEVELAND 8, OHIO



### Keep FIRELINE on the truck!

These days, when all furnace men have more work than they can handle, it's just good business to use Fireline. No long waits for firepot castings when you use Fireline. It repairs any furnace job, big or small. Seals all cracks and holes...Salvages burned-out firepots...Protects and preserves good castings with its durable, heat-saving refractory lining. Quickly installed. Job-for-job, your profit is greater with Fireline. Write for bulletins, prices, and name of nearest jobber.

Also ask about IRONSET Furnace Cement

**FIRELINE STOVE & FURNACE LINING CO.**  
1814 Kingsbury Street, Chicago 14, Illinois

#### GRAY'S FULL SIZE BLUE PRINT PATTERNS ARE A GREAT TIME SAVER

##### SHIP VENTILATOR PATTERNS

From 4" to 40" dia. of base, in sets and single sizes.

##### ELBOW PATTERNS IN TWO SETS

SET No. 1—1" to 20" in 2-3-4-5-6-7 piece, Including T PATTERNS 2" to 20"—152 Patterns.....\$2.50

SET No. 2—20" to 40" in 5-6-7-8-9 piece, 105 Patterns, Including elbow chart, showing what pattern and number of pieces for required angles, also gives the distance between seams in throat for any required radius up to 96". With the two sets is included a circumference chart showing every  $\frac{1}{8}$ " up to 96" dia.

SETS No. 1 & No. 2 post-paid.....\$5.00

##### 45 Degree BRANCH PATTERNS IN TWO SETS

SET No. 3—2" to 12" on 2" to 30"—198 Patterns.....\$5.00

SET No. 4—12" to 24" on 12" to 48"—195 Patterns.....\$5.00

SETS No. 1-2-3-4 cover everything in blow-pipe work. Patterns sent by return mail post-paid upon receipt of P.O. order or check for \$15.00.

**G. L. GRAY**

507 Grand Avenue  
NEW HAVEN 3, CONN.  
Write for pattern circular giving full information.  
Mention American Artisan.



## Profits During Winter Months

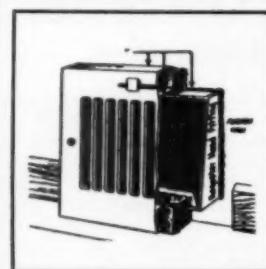
(Continued From Page 60)

round, and the appliance sales took care of themselves. Under this plan we discovered that profits were being made by the store every month of the year.

It would seem from this experience that we in the heating business should add lines which can be sold in the winter and spring months. After this war we are going to have to be better merchandisers. In addition to heaters, stoves and accessories, why not all package lines like cooling units, insulation, hot water heaters, water softeners and possibly deep freeze units. Add one line at a time, so that your salesmen and installers and service men can assimilate the selling, installation and service techniques without too much confusion and trouble.

Selling heating alone is profitable during approximately six months of the year. To make our businesses profitable the year round we can add package lines of stoves, ranges, heaters, cooling units, water heaters, water softeners, deep freeze units and insulation. If this article has stimulated your imagination along winter and spring sales, it will help our industry to be more prosperous and more impregnable against the stiff competition we will encounter after this war from other industries.

## MILLIONS WANT IT!



PREPARE NOW  
to get this profitable  
STREEKNO  
business during the  
WINTER BUSINESS LULL.

STREEKNO  
eliminates dirty, streaked walls.  
Easy to install. HERE'S PROFIT  
FOR YOU—  
Cost of Material—12 Register  
Packings ..... \$ 6.60  
Plus 5 to 10 minutes installing time per register; your  
charge to Customers for  
12 Registers ..... \$24.00

YOUR PROFIT ..... \$17.40

Write today for Literature and Details!

**EXCEL HEATING and AIR CONDITIONING CO.**  
3715-19 Belmont Ave.  
Chicago 18, Ill.



**GRAVITY and  
Air-Conditioning  
Registers**



**UNITED STATES REGISTER CO.**

BATTLE CREEK, MICHIGAN

MINNEAPOLIS • KANSAS CITY • ALBANY

## Dust Collection In the Foundry

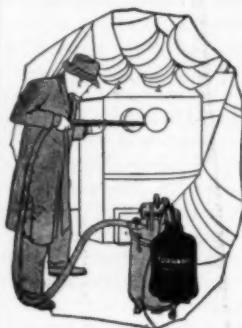
(Continued From Page 90)

Weight efficiencies of dust collectors are of little value unless considered along with a complete analysis of the dust to be caught and the operating conditions. The percentage of silica has a direct bearing on the problem.

Some workers in the field have recommended the maximum number of particles per cu. ft. based on certain free silica content for safe atmospheric working conditions.

Rather than efficiency, a more satisfactory way of expressing effectiveness would be the concentration and dust count of the air exhausted from the collector. Such information can be readily obtained by various apparatus such as the impinger dust sampling apparatus as used by the United States Public Health Service. These values could then be compared with those thought to represent safe atmospheric working conditions. These data would indicate the advisability of discharging a collector into an enclosed building.

It is for the engineer and the foundryman to properly analyze the problem at hand, and to ascertain the degree of fineness of dust it is expected to collect before attempting to choose the collector. Since any type of collector will collect a certain amount of real fine particles, in general, it is better to have an inefficient collector than no collector at all. If the dust is collected immediately at the point of its creation, the chances are good that the dust found in the general atmosphere of the shop will be within reasonable safe limits.



### TORNADO Furnace Cleaners A PROFITABLE POST-WAR BUSINESS

SET yourself up in business for post-war independence. Equip with a TORNADO Furnace Cleaner. As a leverage for selling service and supplies, it's a winner! Powerful. Portable. Easy to operate.

BREUER ELECTRIC MFG. CO.  
5082 Ravenswood Ave., Chicago 40

Plan now for post-war profits. Get details!

## ELATERITE RIGHT for Roofs

Elaterite is the lasting chemical combination which is the best covering either for new roofs or for renewing old roofs. Elaterite is plastic, workable; does not dry out, become brittle, crack or break. Elaterite will not run or "alligator" on the steepest, hottest roof. Once applied Elaterite requires no further attention or renewal. Write for a sample of Elaterite, the "right for roofs" product today!

### ELATERITE PLASTIC PRODUCTS

112 W. Ninth Street

Los Angeles, Calif.

There's Good Profit for You  
in Selling

## MONMOUTH HUMIDIFIERS

- For all warm air systems. Descriptive Bulletins and prices on request.

Formerly made by Monmouth Products Co.  
Now produced by

### THE CLEVELAND HUMIDIFIER CO.

7802 Wade Park Ave., Cleveland 3, Ohio

## REPAIR PARTS

for  
STOVES—FURNACES—BOILERS

Also

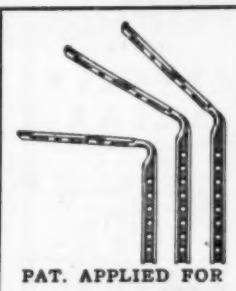
**MODERN AIRE** FURNACES  
Fittings, Registers, Supplies

### DES MOINES STOVE REPAIR CO.

Sam C. Green  
Fred R. Green

DES MOINES, IOWA  
Since 1869

## IMPROVED!



### • B.B. • No. 12 SHANK 33 1/3% STRONGER

IMPROVEMENT IS APPLIED TO  
No. 15—SQUARE, No. 12—1/2  
PITCH, AND No. 25—1/2 PITCH.

SOLD THRU LEADING  
JOBBERS EVERYWHERE

### BERGER BROTHERS CO.

Main Office & Factory  
229-237 Arch St., Philadelphia, Pa.

## UTILITY Appliance Corp.

Formerly Utility Fan Corporation

Evaporative Air Coolers • Propeller Fans  
Standard and Heavy Duty Blowers  
Industrial Exhausters  
and Gas-Fired Heating Equipment

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# NIAGARA

GRAVITY AND FORCED AIR

## FURNACES

DURABLE • EFFICIENT • DEPENDABLE • ATTRACTIVE  
THE FOREST CITY FOUNDRIES CO.

2500 WEST 27TH ST. • CLEVELAND 13, OHIO

### ECON-O-COL

the "Stronghearted"  
STOKER

ECON-O-COL  
Automatic  
COAL BURNER

ECON-O-COL STOKER DIVISION  
COTTA TRANSMISSION CORP.  
ROCKFORD ILLINOIS

THE SHIELD OF QUALITY

Write for  
Catalog and  
Prices



### SPEED UP ORDERS with a BEVERLY SHEAR

Throatless shears that  
cut any shape . . .  
straight, circular or ir-  
regular. FASTER—Pre-  
cision—accuracy! Order  
No. 1 for 14 gauge.  
No. 2 for 10 gauge.  
No. 3 for 3/16 Inch  
mild steel and 10 gauge  
stainless.

BEVERLY SHEAR  
MFG. CO.  
3804 West 111th St.  
CHICAGO (43), ILL.

## ROCK ISLAND REGISTERS and INTAKES

Two trade marks to remember when you want  
the height of efficiency, beauty and low cost  
combined in registers and intakes.

### AIR-VANE

Dealers Net Estimating book, a time and money  
saver, sent free upon request.

★ ROCK ISLAND REGISTER CO.  
ROCK ISLAND ★



# WAR TIME

In recognition of outstanding performance, Williams Oil-O-Matic Heating Corporation of Bloomington, Illinois, has just received the official "Approved Quality Control Rating" of the U. S. Army Air Forces.

This new and much coveted rating is granted only to a manufacturer who has an inspection system in operation that meets the high standards of quality required by the Army Air Forces.

Beckley Perforating Co., Garwood, N. J., manufactures units and cathodes for manufacturing chlorine gas to the full extent of their manufacturing capacity—all on war orders.

Robert John, foreman welder, has completed 50 missions as tail gunner and has returned for reassignment of service.

Their stoker, anthracite burner—Black Diamond model—will be developed for postwar sales to include a model steel water tube boiler for domestic use. The combination stoker and boiler will occupy less than 150 cubic feet of space, will be completely automatic control with both indoor and outdoor thermostats.—C. D. Gilpin, President.

Employees of the U. S. Machine Corporation, Lebanon, Ind., manufacturers of Winkler Stokers, have just received their fourth Army-Navy "E" flag for outstanding production of war materials. Throughout the war not one man-hour has been lost because of labor difficulties among the 1,000 men and women workers, this record being attributed largely to the personal stake they have in the conflict.

In one section of the 81-MM mortar shell line the following work side by side: Mrs. Bessie Laffin, widowed mother of five boys in the service, one of whom was killed on a bombing mission; Virgil Harlos, whose only son was killed in action on the Italian Front; Norman Newkirk, who has four brothers overseas; Mrs. Frank Davidson, who for 28 months has bought a \$25 War Bond each week for her son held prisoner by the Germans for two years; Miss Tressie Tribbett, who resumed her war job after receiving a medical discharge from the WAVES with whom she served more than a year; John Shue, one-armed father of three boys in the service, one of whom was killed on a bombing mission; Mrs. Edith Rogers, with three sons overseas, one of whom is a flier decorated in both the Pacific and European war theatres and who recently returned to his base after being listed as missing in action several months; a medically discharged overseas veteran who took his old job back the day after arriving home, and three women whose husbands are overseas.

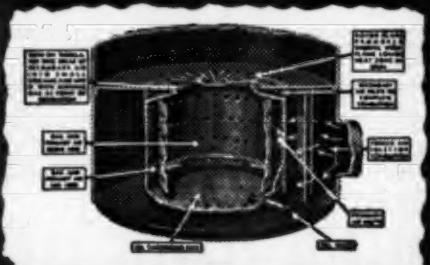
On the company's payroll are numerous other Gold Star fathers and mothers, and eight of its 250 employees in the armed forces have given their lives.

Twenty percent of the firm's output is devoted to stokers and the remainder to war materials which have included shot, shell, airplane propeller parts, field safes, artillery gun gears, etc.

Famous Patented *Monogram* Vaporizing Burner  
Provides Highest Known Operating Efficiency with Oil

Full Forced  
Winter Air  
Conditioners

•  
Booster  
Gravity  
Units



Utility  
Room  
Units

•  
Automatic  
Water  
Heaters

The QUINCY STOVE MFG. COMPANY, Quincy, Illinois

# TRADE NEWS



The fourth Army-Navy "E" award presented to the Brown Instrument Company, a division of Minneapolis-Honeywell Regulator Company, for war production excellency was accepted February 20 by a group of honorably discharged veterans of World War II on behalf of their fellow workers and management of the Philadelphia industrial precision instrument manufacturer. All were Brown workers before they donned Army, Navy and Marine uniforms.

Mr. E. B. Eyleth, vice president, pointed out that the Brown company has rehired every honorably discharged veteran, former employee who sought reemployment.

Several hundred employees of the Brown Steel Tank Company, 2901 S. E. Fourth St., Minneapolis, celebrated two important events recently at a party held on February 11, 1945. Naval officers were special guests. The party marked the firm's tenth anniversary and also the winning of their fourth "E" award. Capt. George F. Jacobs, USNR, Inspector of Naval Material for the Minnesota district, stressed the important part played by Brownie-built steel pontoons in the landing of men and equipment on hostile shores throughout the world. His plea to "stay on the job," was given additional emphasis by Lt. Ritter, USNR, who talked for several minutes describing the actual uses of the Brownie-built pontoons in warfare. Lt. Ritter, who took part in the landings on Normandy and Saipan, emphasized the necessity for constant production of all war materials.

Decatur Iron & Steel Company, Decatur, Alabama, is making 105 and 155 mm ammunition containers for the Ordnance Department, aluminum pontoons and tugboats for Army Service Forces, barges for the U. S. Engineers and component parts for ships for the U. S. Maritime Commission and the U. S. Navy. About 95 per cent of their present business consists of war orders.

Ninety-two former employees are in the service—13 in the Air Corps, 47 in the Army, 5 in the Marines and 27 in the Navy. Of these, 13 are Lieutenants.

The following are in service:

Major W. E. Hall, Army Air Corps—salesman and engineer  
Ensign Knox McMasters, U. S. Navy—manager production  
department

Lt. R. C. Strother, Pilot Army Air Corps—ornamental iron  
draftsman

Capt. Robert Adams, Pilot Army Air Corps—ornamental iron  
draftsman is now a Prisoner of War in Germany

Lt. John Barnette, U. S. Marines—ornamental iron draftsman

Lt. Henon Pearce, U. S. Army—structural steel engineer

Lt. Guy Blackwell, U. S. Navy—structural steel engineer

Ensign Fred Trimble, U. S. Navy—structural steel engineer

Lt. (j.g.) O. E. Graham, U. S. Navy—structural steel engineer

One hundred per cent of the approximate 500 employees in the shipyard, and 97 per cent of the approximate 500 employees in the main plant are buying bonds.

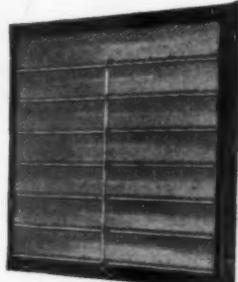
Of the 92 men in service, 53 are serving on foreign soil, 24 have seen action that the company knows of, one was killed in action in France, and one is a prisoner of war in Germany.—C. A. Ballentine, Vice President.

## Elgo Ventilating Specialties

### Shutters Again Being Made of Aluminum!

Elgo Automatic Shutters are again being made of aluminum, just as in pre-war days. Introducing new features and advantages, the new Elgo line is all that you have been led to expect—and more!

Write for catalog and prices



"ELGO" TYPE  
AUTOMATIC SHUTTER  
Front View (Closed)

ELGO SHUTTER & MANUFACTURING CO.  
6966 W. Jefferson  
Detroit 17, Mich.

Free  
CATALOG

**Leader**

## KOOLSTACK FURNACES

FOR STOKERS

OIL or HANDFIRED  
50,000 to 200,000 BTU's

Patented Damper  
Uses All the Heat  
in the Added Heat-  
ing Surface

THAT  
IS SOMETHING  
TO SELL

LEADER IRON WORKS, Inc.  
Decatur Illinois

WATCH FOR Gilco's announcement of their new improved line of Automatic Water Heaters and Furnaces

# GILCO

Automatic  
FURNACES and WATER HEATERS

J. L. GILLEN & CO.  
DOWAGIAC MICHIGAN

IMMEDIATE DELIVERY  
FROM STOCK!

CONDUCTOR  
PIPES, TOO!



ELBOWS &  
SMOKE PIPE

**KRAUSER-BOYD, INC.**

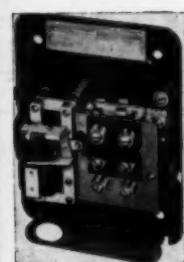
553 RIVER ROAD • N. TONAWANDA, N. Y.

## MERCOID NOISELESS RELAYS

Are Mercury Switch Types—Exclusive in Design and Operation

THE QUIET OPERATION OF THE  
MERCOID TRANSFORMER-RELAY  
MAKES IT IDEAL FOR ALL OIL  
BURNER AND STOKER RELAY  
REQUIREMENTS

THE MERCOID CORPORATION  
4201 BELMONT AVENUE.  
CHICAGO, ILL., U.S.A.



Effective  
Roof  
Ventilation



## Aridge Ventilation

All materials and sizes. Shipped in 10-ft. lengths. Dampers optional.

**ÆOLUS DICKINSON**

33RD STREET AND S. ARTESIAN AVENUE  
CHICAGO 8, ILLINOIS

FEW AS  
GOOD  
Stokers  
Handy  
Fittings  
Repairs

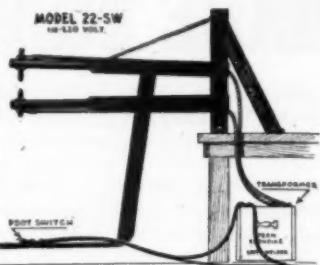
**GILTEDGE**

NONE  
BETTER  
Blowers  
Rock Island  
Registers  
Humidifiers

All genuine Gilt Edge repairs carry a label saying "Genuine Gilt Edge Part." We have genuine Gilt Edge repairs for Gilt Edge Hummer, Gilt Edge Crescent, Gilt Edge Radium, Gilt Edge Badger, Gilt Edge Liberty, Gilt Edge Solar, Gilt Edge Fireside, 500, 600, 700, 800 and 900 Series Furnaces and Gilt Edge Round and Square Boilers. We are successors to the Schwab & Sercomb Co., R. J. Schwab & Sons Co., and the Schwab Furnace & Mfg Co. Buy from jobbers who carry genuine Gilt Edge repairs or write us. We can furnish a Gilt Edge Furnace on the proper priority.

**SCHWAB FURNACE CO.**

193 SO. SECOND STREET  
MILWAUKEE 4, WIS.



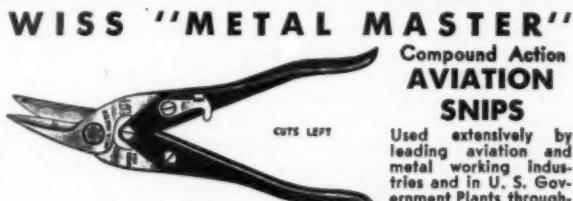
**FERN**  
Klondike Spot  
Welder

Model 22SW Bench Type

Operates on any ordinary 30 or 60 amp. electric service. Spot welds 20 gauge or lighter metal, cold-rolled steel, hot-rolled steel (Clean, Pickled), Stainless Steel, Nickel Plated Steel, Nickel Alloys, Monel Metal, Silicon Bronze Type Alloys, Pure Zinc and Nickel Silver, Unpickled Hot-Rolled Steel, Aluminum and its Alloys, Tin Plate, Terne Plate, Chrome Plate, Galvanized Iron and other coated materials. The Fern Klondike Spot Welder costs but a third of other spot welding equipment but does the work of machines which cost three times as much. This equipment can be transferred from job to job or can be used on a bench in shop. Can be purchased in an 18 or 20 inch throat, very simple to operate.

**RALPH FERN**

2517 Boulevard Ave.  
Scranton 9, Penna.



• Cuts circles, squares and irregular patterns on Stainless, Dural, and Monel Metals with ease.  
• All Parts interchangeable.  
• M1 for cutting left—M2 for cutting right.  
WISS BULLDOG AND STANDARD PATTERN SNIPS are used in Shipyards, on Government construction projects, and on maintenance work wherever sheet metal is required.

Send for literature of complete line

**J. WISS & SONS CO.**

ESTABLISHED 1848

NEWARK 7, N. J.

# Classified Advertising

(For rates see page 151)

## UNIVERSAL TOOLS

Immediate Delivery

Pipe Wrench  
Channellock Pliers  
Adjustable Wrench  
CooTee Pliers  
Diagonal Cutters  
Hammer  
Screwdriver  
Vise-Grips  
Hacksaw  
Cold Chisel

**\$19.85  
10 Pcs. Set**

Remit with Order. Catalogue Free with First Order. Remember: We have it—Can get it—or it isn't made. Mail your order Today!!

**DEALERS TOOL SUPPLY**  
1527 Grand H.P., Kansas City, Mo.

FOR SALE: Plumbing, Heating, Roofing & Sheet Metal Shop in city of 40,000 population. Good stock of merchandise. Offering for sale due to ill health. Address Key No. 596 American Artisan, 6 No. Michigan, Chicago 2, Illinois.

ENGINEER—Heating and Ventilating with well rounded knowledge of modern home heating equipment using gas, oil or coal. Knowledge of control equipment desirable. Excellent opportunity offered an engineer capable of designing complete control equipment for manufacturer well established in the control industry. Address Key No. 595, American Artisan, 6 N. Michigan Ave., Chicago 2, Illinois.

WANTED: A Baker or Swift furnace cleaner. Carvutto Furnace & Supply Co., 129 So. Capital St., Iowa City, Iowa.

WANTED: Set Tinner's Tools for general job shop. State make, condition and price in answering. If you have not full set, send list and price of what you have to offer. R. H. Vandervelde, Box 33, Dyersburg, Tennessee.

★  
**Buy  
Bonds**

until the last shot is  
fired in Europe . . .  
then buy until  
Japan calls quits!



# AMERICAN ARTISAN

## Service Section

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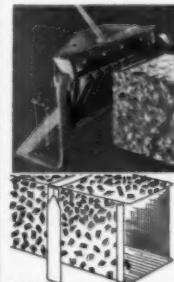
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**LEX. R. BENSON CO., INC., HUDSON, N. Y.**

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